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Epidemiology of Malaria in the Philippines*

PAUL F. RUSSELL, M.D.
International Health Division, The Rockefeller Foundation, New York, N. Y.

THE epidemiology of malaria in the Philippines, although a relatively simple matter, is yet a subject of unusual interest. In the first place, classical references to the "marsh dragon," to paludic coastal swamps and stagnant pools, have no application in this country. Paradoxically, not low-lying but well drained areas are apt to be malarious, a fact recognized soon after the American occupation but overlooked and rediscovered several times. This is a second point of interest, namely, that standardized accounts of etiology have diverted the eyes of observers so that obvious facts have been discounted and the significance of the stream breeding vector of malaria sometimes entirely missed.

There are very few references to malaria in the Philippines prior to 1898, when the United States assumed responsibility from Spain. It can be said with reasonable certainty, however, that malaria was indigenous in 1521 when Magellan went to the Islands, and that it has remained prevalent. But there is nothing in the records to suggest that this disease ever has been such a menace to life and health in the Philippine Archipelago as it has been in nearby Dutch and British Malaya and in India. In particular, the largest cities, such as Manila and Cebu, have always been free of malaria. The fact that officials have resided largely in such non-malarious communities, where in the past cholera, dysentery, and smallpox were destroying their thousands annually, led to a belief that malaria was neither widespread nor important. This view still prevails and has handicapped efforts toward control, for, although malaria is not first in importance, it certainly belongs to the leading quartet of diseases and is doubtless responsible for some 10,000 to 20,000 deaths annually in a population of approximately 13,000,000. No reliable statistics are available, but it seems likely that there are at least 2,000,000 cases of malaria each year throughout the Islands.

Surveys have been made from time to time which bear out this estimate.

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For example, Barber and his colleagues [1] visited 14 provinces, examined over 4,000 blood smears and made over 5,000 spleen palpations. They found a parasite index of 11.0 per cent, and a spleen index of 13.3 per cent. Holt and Russell [2, 3] made 8,791 spleen examinations in 32 provinces, finding a spleen index of 18.8 per cent.

Recorded malaria mortality rates have fallen markedly in the Islands. For example, there were in 1905, 662 malaria deaths per 100,000 of population; in 1915, 297; in 1925, 218; and in 1932, 77. There is no evidence that larva control, quinine consumption, or use of bed-nets has been responsible to any great extent for this improvement. Doubtless more doctors and better hospital facilities have had a marked influence. Moreover, malaria control work on certain haciendas and at Army posts must have had some effect; but certainly the seemingly rapid decline in malaria deaths from 233 per 100,000 in 1924 to 77 in 1932 cannot be attributed, in my opinion, to the sharply limited malaria control program of the Bureau of Health. Probably changed diagnosis has been a large factor, as noted by Manalang.[4]

INSECT HOST

There are 25—in fact probably at least 28—species of Anopheles in the Philippines. The most recent list is that of Russell and Baisas [5] which gives the following species:

ANOPHELES IN THE PHILIPPINES

1. *A. aitkeni* var. *bengalensis* Puri, 1930
2. *A. annularis* van der Wulp, 1884 (Formerly called *fuliginosus*)
3. *A. baezi* Gater, 1933 (This may not be true *baezi* but a closely related variety. It is certainly not *umbrosus* as formerly called)
4. *A. barbirostris* van der Wulp, 1884
5. *A. filipinae* Manalang, 1930
6. *A. gigas* var. *formosus* Ludlow, 1909
7. *A. hyrcanus* var. *nigerrimus* Giles, 1900
8. *A. hyrcanus* var. *sinensis* Wiedemann, 1928
9. *A. insulaeflorum* Swellengrebel and Swellengrebel de Graaf, 1920
10. *A. karwari* James, 1903
11. *A. kochi* Dönitz, 1901
12. *A. kolambuganensis* Baisas, 1931
13. *A. leucosphyrus* Dönitz, 1901
14. *A. lindesayi* var. *benguetensis* King, 1931
15. *A. litoralis* King, 1932
16. *A. ludlowi* Theobald, 1903
17. *A. maculatus* Theobald, 1901
18. *A. mangyanus* Banks, 1907
19. *A. minimus* var. *flavirostris* Ludlow, 1914
20. *A. parangensis* Ludlow, 1914
21. *A. philippinensis* Ludlow, 1902
22. *A. pseudobarbirostris* Ludlow, 1902
23. *A. subpictus* var. *indefinitus* Ludlow, 1904
24. *A. tessellatus* Theobald, 1901
25. *A. vagus* var. *limosus* King, 1932

Three undetermined species were also mentioned in the list.

This is an imposing array, but to date only 2 of all these anophelines have been incriminated as vectors of malaria. These are *A. minimus* var. *flavirostris* and *A. maculatus*. Manalang [6] reported over 50,000 dissections of various Philippine wild-caught Anopheles, only *A. minimus* being found infected (" excepting a heavily infected stomach of *A. vagus* Dönitz, out of over 10,000 dissections of this species "). King [7] reclassified the *funestus-minimus* sub-group, and it seems probable that Manalang's infected *minimus* mosquitoes were *A. minimus* var. *flavirostris*. King and Russell [8] reported discovering the latter species infected in 2 instances and I have since amply confirmed the fact that it is indeed a carrier, finding it infected in nature with sporozoites in the salivary glands 10 times in 3,242 dissections (0.3 per cent). On epidemiological grounds also Holt and Russell [2] concluded that this species is the chief vector. As regards *A. maculatus*, Ejercito [9] has found it infected in nature up to 0.3 per cent in one locality. But it is chiefly a zoöphilous

species and seems rarely to have spread malaria in the Philippines.

Apparently the chief factors involved in making an anopheline a purveyor of malaria are: (1) its relative prevalence, (2) its susceptibility to infection, (3) its house frequenting habits, and (4) its feeding proclivities. *A. minimus* var. *flavirostris* satisfies all of the criteria fairly well but not superlatively so. In the first place, it is prevalent in all malarious areas of the Islands. In the second place, Walker and Barber [10] found that their *A. febrifer*, which I believe was chiefly *A. minimus* var. *flavirostris*, was the most susceptible species tested by experimental infections. Thirdly, although *minimus* var. *flavirostris* is rarely taken in houses in the daytime,[11] night-catching experiments [12] and catches in mosquito nets poorly constructed or used,[1] indicate that this species certainly frequents houses at night. Finally, as regards its food preferences, Laurel [13] has shown by precipitin tests that it will feed with about equal avidity on either man or water-buffalo. In fact, it may imbibe blood at one time from man and at a subsequent feeding from a water-buffalo.[14] Thus it is not difficult to understand, in the first place, why it is the chief carrier and, in the second place, why it is only a moderately potent one. If it were decidedly androphilous, instead of being somewhat indifferent as to whether or not it will take man's blood, doubtless malaria would be a much more serious matter in the Philippines.

As to other habits of this chief carrier, Manalang [4] has shown that it bites quietly at night, causing such a faint skin reaction that in the morning one may find no evidence of its depredations. Russell and Santiago [15] have shown that it can fly up to 2 kilometers but it seems unlikely that its effective flight range is often over 1 kilometer.

Its preferential breeding habits are of great interest. *A. minimus* var. *flavirostris* breeds chiefly in small streams and flowing irrigation ditches, more often in shady than open places, and in clear rather than in turbid water. Clean, fresh, flowing, and slightly shaded water is distinctly preferred, especially if bamboo roots are available for sheltering larvae. Occasionally it has been found in wells and pools but never in brackish or sea water, never in rice fields, and never above 2,000 feet altitude.[2]

Thus malaria in the Philippines is chiefly prevalent in the foothills. Coastal swamplands, flat agricultural plains, and high plateaus are definitely not malarious, but wherever there are foothills drained by small streams there malaria is found. When these streams are flushed out by heavy rains, or when they become dry, malaria transmission ceases because the vector is not being propagated. Hence it is correct to state that malaria is a disease of transitional zones and transitional seasons. That is to say, it is found in that belt of land between plains and mountains, namely, the foothill zone, and is most abundant in those seasons, twice a year, between the wet and dry months. Where there are no pronounced wet and dry periods, malaria is perennial.

It seems highly probable that this band of foothill malaria, separating lowlands from mountains, has in the past been the chief reason why people of the hills were kept distinct ethnologically from those of the plains. In days of slow and laborious transport when lowlanders tried to penetrate the foothill jungles, they were turned back by malaria. So, too, mountain folk who tried to descend through the zone of *minimus* var. *flavirostris* were deterred by this disease bearing insect.[16]

It is notable that as far back as 1904 Crosby and Whitmore [17] of the

Army recorded at Fort Stotsenburg that malaria was associated with running and not stagnant water. Craig [18] in 1909 referred to the foothills as being malarious. Whitmore [17] in 1904 made what were undoubtedly the first dissections of Anopheles in the Islands, and he noted that 30 per cent of what he called *Myzomyia funesta,* in 200 specimens were infected. He concluded that *Myzomyia funesta* was probably "the one mosquito that carries malaria infection at this station." It seems very likely that he was dealing with *minimus* var. *flavirostris* for I have found this species in the stream breeding places he described at Stotsenburg.

These careful studies by Whitmore were made only 6 years after Ross's discovery but unfortunately were never published. They were buried away in the medical record book of the Fort. Here was the key to the malarial situation not only at Stotsenburg but throughout the entire archipelago. It remained hidden for 10 years, and even at the Fort in the same record book we read, in later pages, of "stagnant water," "pools," "tin cans," and "bamboo joints," as "breeding places for malarial mosquitoes." In 1914 Walker and Barber [10] rediscovered this basic fact in the epidemiology of malaria in the Philippines. But although their report was published, another 10 years passed before the Bureau of Health could cast aside ancient ideas of malariogenic stagnant water and marsh land. Even as late as 1921 the annual report of this bureau referred to malaria as "due to the continuous standing of stagnant water in the rice paddies and the thick vegetation surrounding almost every district and barrio." Not until 1925 was any malaria control in the Islands based definitely on this fundamental fact that the disease is carried by a stream breeding anopheline found only in the foothills.

PLASMODIA

All 3 common species of plasmodia are found in the Philippines. Holt and Russell [2] found in 544 positives among 2,302 examinations the following species percentages:

P. vivax	60.3
P. falciparum	34.9
P. malariae	1.1

Thus it would appear that quartan malaria is uncommon. Craig [19] has noted that in 1900 he found *P. ovale* in the blood of soldiers returning from the Philippine Islands. It has not been reported again, nor have *P. tenue* forms been encountered.

BLACKWATER FEVER

Blackwater fever has been very uncommon in the Philippines. Craig [20] noted its almost complete absence. Stephens [21] recorded a few cases. My own surveys in all but 2 of the 49 provinces led me to believe that while blackwater fever definitely does occur in the Philippines, it is a rare disease.

MALARIA CONTROL

As early as 1906 the Bureau of Health in the Philippines, aided by schools, post offices, and prominent citizens, facilitated free distribution of quinine in malarious districts. A vigorous educational campaign was carried on through schools. What was gained from this attempt to control malaria by drugs, no one knows. But the 1912 report of the bureau stated that it was "impossible to say whether quinine had influenced the death rate or not." Later, the 1914 report stated that "at best, of course, quinine distribution can only be palliative and the problem resolves itself into preventing the breeding of mosquitoes that carry malaria." There is no indication that drug prophylaxis has been successful in the Philippines any more than elsewhere. Costs of such control and

practical difficulties of distribution are always serious handicaps. Recently a successful attempt has been made to cultivate cinchona in the Islands and it is planned to make totaquina as a cheap febrifuge.[22] There, as elsewhere in the tropics, quinine is a "rich man's remedy" and most country people are unable to purchase it in therapeutic doses. Such efforts to provide cheaper quinine are laudable in that they reduce suffering and death; but malaria is not yet controllable with drugs.

Mosquito nets were used by the Army from the first days of occupation, but the early netting was usually of 14 mesh, size and quality being poor. Moreover, in the field, soldiers tended to neglect such prophylaxis. Yet there is evidence that subsequent to 1906, when these nets were improved, this method of prophylaxis materially lowered malaria morbidity rates of the Army.[17] Recently there has been an attempt to popularize nets made very cheaply from hand-woven native simamay cloth.[23]

As to fish, Seale [24] introduced *Gambusia affinis* into the Hawaiian Islands from Texas in 1905 and from thence to Manila in 1913. These fish have persisted in artificial ponds at the Bureau of Science but have disappeared elsewhere and have been of no value at all against malaria.

Paris green seems most suitable in the Philippines for combating this disease. It was first suggested for local use in 1915 by Barber.[1] He and his colleagues concluded as regards control that

> . . . the best single measure is the destruction of larvae of malaria carriers, and in this work the breeding places of the stream-breeder should receive first attention. Our own experience and that of others in the destruction of stream-breeders by means of larvicides leads us to believe that this measure is a practical one in the Philippines and that it is within the means of many malarious communities in the archipelago to reduce the amount of malaria by this measure.

Nothing was done to follow out these suggestions until years later when the Army began to use Paris green at Fort Stotsenburg. The success of this work has been notable.[17] Malaria admissions to the Stotsenburg hospital dropped from 415 in 1924, to 10 in 1930, with nearly the same strength of personnel.

At the Iwanig Penal Colony by the Bureau of Prisons, and on several haciendas, Paris green has been used to good advantage so that, although the Bureau of Health has shown no enthusiasm for larvicides, it seems clear to most observers that the only hope of effective malaria control in those places in the Philippines where finances permit it, is through systematic destruction of the larvae of *A. minimus* var. *flavirostris*. The cost is not beyond the means of numerous malarious communities.

However, it appears to be true that, economically, malaria prophylaxis in much of the rural tropics is not feasible. Many barrios in the Philippines, for example, could not afford more than $.05 per capita per annum for malaria control. So far as I know malaria has never been controlled in rural areas for so little. In the United States costs average $.70 to $.80 per capita the first year and from $.20 to $.30 thereafter. In the Philippines costs have not been below $.25 per capita per year and usually have been higher.

The longer one observes malaria in the tropics the more one is forced to conclude that, so far as average rural areas are concerned, the problem of control is still unsolved. Malaria prevention in the tropics by means of drains and subsoil pipes, larvicidal oil, and Paris green is entirely feasible at the present time, without further research—in cities, organized industrial

and agricultural centers, such as mines, rubber plantations, sugar haciendas, and tea gardens, in military cantonments, in communities of government employees or prisoners, and in certain prosperous rural towns; but for most malarious rural areas in the tropics it appears that we have no economically feasible control methods. In such places naturalistic or biological methods eventually may prove to be useful. Such devices as automatic flushing or sluicing of small streams as practiced by Scharff in Malaya, salting a marsh as done by Hackett in Albania, intermittent irrigation of rice fields as tried by Drensky in Bulgaria, cultivating shade vegetation as by Ramsay in Assam, and altering the flora of fish ponds as done by Walch in Java—all these methods and others come under this heading of naturalistic control.

It may be recalled that Ross's discovery led to the dictum "No mosquitoes—no malaria." Grassi and his Italian colleagues narrowed this to "No Anopheles—no malaria." But anopheline species are so numerous that it is an impossible aim to destroy even all Anopheles. So the great German Koch said, "Ignore the mosquito. Sterilize the blood of man, then mosquitoes cannot become infected." This seemed relatively simple but proved to be impossible. So far as I know, the drugs quinine, plasmochin, and atabrine have never eradicated malaria from an area or even from a single town. It may be that synthetic remedies, easy to take, quickly effective, specific against sporozoite, schizont, and gametocyte alike, may some day be manufactured. Koch failed with quinine, and just about this time, when the whole problem seemed insoluble, Watson in Malaya came along and said, "Species control. Ignore all Anopheles except the carriers." This idea was brought to the United States by Darling and has been used widely against *A. quadrimaculatus* in the South. Elsewhere throughout the world it has been most useful.

Even species control is impossible for economic reasons in much of the rural tropics, if the usual larvicides or ditching are used in the ordinary ways. So now malariologists are investigating naturalistic methods of species control in the hope of finding cheap automatic procedures, especially those which will lead directly to improved agricultural yields. To such methods the rural tropics must turn.

Dependence must be on time rather than money, and malariologists in the tropics must visualize inexpensive but continuous programs extending over decades of time. Perfection and speed in any line of human endeavor are expensive. Certainly, this is true of malaria control programs. It is probably a mistake for the tropical malariologist to strive for perfection, because the tropics are too poor to pay for it. Rather there must be constant striving for continuity of modest effort. *Time* more than *Money,* and *Continuity* rather than *Perfection*—these must be the mottoes guiding malaria control in the tropics.

So, if in the Philippines there has been very little malaria control, except in military and hacienda communities, the reason lies only partly in official apathy. It is partly because we do not yet know how to control malaria in much of the rural tropics at a cost the people can bear.

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NOTE: The author from 1929 to 1934 was director of Malaria Investigations, Philippine Islands, a project jointly supported by the Bureau of Science, Manila, and by The Rockefeller Foundation.

The Science Researcher

"WHAT determines the rank of the science researcher is the uncolored virginity of his approach, free even from sympathy with his own hypothesis, ruthless toward any attempt to implicate his findings with their effect on a possible bystander. The moment he takes the bystander into account, or attempts to interpret discovery in terms of the average mind, he must abandon this fine inviolateness and shift his facts so that they are patterned around the lacunae in the minds of his audience rather than by their intrinsic relation to discoverable truth. The scientist who does this once, successfully, will not be able to resist the temptation to do it again, and after a third time it will be left for his brother scientists to remark that the chilled edge of his mind never comes back to him."—Mary Austin, in *The Humanizing of Knowledge*, by James Harvey Robinson, 1924.

Progress Report on Pertussis Immunization*

PEARL KENDRICK, Sc.D., F.A.P.H.A., AND GRACE ELDERING†
Associate Director, and Bacteriologist, Michigan Department of Health, Bureau of Laboratories, Western Michigan Division, Grand Rapids, Mich.

SINCE the latter part of 1932, a study of whooping cough has been in progress in Grand Rapids. The work has been outlined and certain bacteriological findings have been summarized in previous reports.[1, 2, 3] In this paper, we are reporting our findings to date in connection with our investigation of the value of *B. pertussis* vaccine in the prevention of whooping cough.

Most notable of the reports on the use of *B. pertussis* vaccine as a prophylactic measure are those of Madsen and of Sauer. In an epidemic in the Faroe Islands in 1929 Madsen[4] reported that of 1,832 vaccinated children, 458, or 25 per cent, did not contract whooping cough; of 446 non-vaccinated children, 8, or less than 2 per cent, failed to become infected. He considered these results favorable and thought they rested on the use of young strains of *B. pertussis*, a total dose of 22,000 million bacteria and the completion of vaccination shortly before the onset of the epidemic.

Sauer[5] concluded from his series that if injections were completed at least 3 months before actual exposure to the disease, a total dose of 70,000 to 80,000 million organisms conferred immunity against whooping cough.

Our own study has not been carried on for a sufficient time nor do our results embrace sufficient numbers to warrant final conclusions. However, we believe they do contain sufficient of interest to justify a progress report.

GENERAL PLAN

The vaccine used has been described.[3] Briefly, it is a once-washed 10,000 million per c.c. suspension of *B. pertussis*, Phase I of Leslie and Gardner,[6] grown on Bordet-Gengou medium enriched with 15 per cent sheep's blood. The organisms are killed with merthiolate 1:10,000 or phenol 0.5 per cent allowed to act at cold room temperature for a week or more.

The optimum dosage by no means has been determined. Sauer used more than 3 times as large a total dose of vaccine as Madsen—perhaps the most important difference between the procedures of these two authors. The fact that Sauer reports such excellent protection results calls attention to the need for considering the question of total amount of injected antigen. In most of our vaccine treated individuals we have used a total quantity of vaccine close to that suggested by Sauer.

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† With the coöperation of the City Health Department of Grand Rapids, A. H. Edwards, M.D., Health Officer; Fred Miller, M.D., School physicians in charge of immunization clinics.

Actually we are following our test group in two series—one including those children who have had a total of 6.0 to 7.5 c.c. of vaccine—most of them having had 7.0 c.c.; the other all those who have had less than 6.0 c.c. but have had at least 2 injections and a total of no less than 1.5 c.c.

The present scheme of injection which provides for a total of 7.0 c.c. is as follows:

Dose No.	Subcutaneous Injection at Site of	Quantity Right c.c.	Quantity Left c.c.
1	Biceps		1.0
2	Triceps	1.5	
3	Triceps		1.5
4	Deltoid	1.5	1.5

The muscles are specified merely in an effort to systematize clinic procedure and to avoid giving 2 doses in the same site.

The study is directed toward the preschool child and vaccine is used therefore in presumably nonimmune children in the age group of 8 months to 5 years, with emphasis on 1 and 2 year old children.

The test group comprises the vaccine injected children. The control group is made up of children of the same age group and chosen at relatively the same time as the test children but who have not received vaccine injections. A special effort is made to leave untreated children in the families containing vaccine injected individuals.

The forms for keeping records include a vaccine inoculation blank, home visit slip and exposure record, case history form and permanent file card for recording all information on each child in the study. The follow-up information on exposure to whooping cough and subsequent cases is obtained through the Bureau of Public Health Nursing of the City Health Department by nurses' visits at 3 to 4 months intervals. Information is also gained by checking laboratory records of cough plate findings which are filed alphabetically according to patients. When there is a record of a questionable cough, a case history is obtained on the child and also one on the source of exposure together with a record of exposure details.

DEFINITION OF TERMS

Before recording the results it is necessary to define the terms used. The difficulties of describing accurately the type of exposure, the severity of a case of whooping cough, and, indeed, of drawing a satisfactory line between what is and what is not a case of whooping cough, cannot entirely be overcome. We have drawn up rather arbitrary standards, realizing that they are not entirely adequate.

We have classified exposures as definite, indefinite, and unknown. A definite exposure may be in the family or it may be a household exposure outside the family—that is, an intimate indoor exposure to a child with whooping cough during the first 3 weeks after onset of first symptoms. Indefinite exposures include the wide variety of reported contacts which do not classify under definite exposures. An unknown exposure describes the exposure of a child who contracts whooping cough but for whom there is no record of any exposure to the disease.

To indicate the severity of the disease we have used the terms severe, typical, light and very light. A case is severe if paroxysms are unusually frequent and violent, if the duration of disease is more than 6 weeks, if loss of weight is marked, or if complications such as bronchopneumonia occur. Typical cases include those with the characteristic whoop and an uncomplicated disease duration of 4 to 6 weeks. A light case is one in which the duration is less than 4 weeks with only occasional whooping or vomiting

TABLE I

OUTLINE SUMMARY OF STUDY

Groups in Study	Test Group Vaccine Dosage: 6.0–7.5 c.c.	1.5–5.5 c.c.	Total	Control Group	Totals
Number in group	552	160	712	880	1,592
No record of case or exposure	503	149	652	796	1,448
Exposures: all kinds	49	11	60	84	144
Whooping cough contracted	3	1	4	63	67
Not contracted	46	10	56	21	77
Discontinued from study for various reasons; no follow-up records					80

and no obvious interference with nutrition. A case is considered very light if there is no whooping and no vomiting but a cough which lasts for more than 1 week in conjunction with a history of definite exposure or positive cough plate findings. A cough of less than a week's duration is not considered whooping cough.

THE FINDINGS TO DATE

The number of children in the study up to August 20, 1935, is 1,592—not including 80 discontinued for various reasons, largely because they could not be located after change of address. In Table I the division into test and control groups is indicated and the results of exposure to whooping cough outlined.

A more detailed record of exposures and subsequent cases is given in Table II.

In considering the definite exposures recorded in the whole test group, if we add the 2 instances in which whooping cough occurred with unknown exposure, then there would be 29 definite exposures followed by 4 cases of whooping cough, that is, the subsequent cases are 13.7 per cent of the definite exposures. Following the same scheme in the control group, 45 cases followed 50 definite exposures—or the cases are 90 per cent of the definite exposures. Considering all types of exposure, there

TABLE II

EXPOSURES TO WHOOPING COUGH AND RESULTING CASES IN TEST AND CONTROL GROUPS

Type of Exposures	Test Group Vaccine Dosage 6.0–7.5 c.c. Exposures	Cases	1.5–5.5 c.c. Exposures	Cases	Control Group Exposures	Cases
Definite						
In family	14	0	2	1	32	29
Other household	7	1	4	0	7	5
Indefinite	26	0	5	0	34	18
No record of exposure but contracted whooping cough	2	2	0	0	11	11
Totals	49	3	11	1	84	63
Total exposures			60		84	
Total cases			4		63	

were in the test group 4 cases, or 6.6 per cent of 60 exposures; in the control group there were 63 cases, or 75 per cent of the 84 exposures.

While expressing these figures in terms of percentages, we call attention to the danger of giving them too much weight in the face of the relatively small number of whooping cough cases.

An interesting point is the occurrence of 11 cases of whooping cough in the control group without known exposure compared with 2 in the test group. One is tempted to consider the possibility that there have been more instances than recorded of exposure in the test group not followed by whooping cough.

TABLE III

WHOOPING COUGH CASES
SEVERITY OF DISEASE IN TEST AND CONTROL GROUPS

	Number of Cases				
Group	*Severe*	*Typical*	*Light*	*Very Light*	*Totals*
Test group					
Dosage					
7.0–7.5 c.c.	0	0	2	1	
3.75 c.c.	0	0	0	1	
Total					4
Control group	11	42	7	3	63
Totals	11	42	9	5	67

A comparison of the severity of disease in the test and control groups is made in Table III.

The number of cases is not large but it may be of significance that all 4 cases which occurred in the test group were either very light or light, while of the 63 cases in the control group, 10, or about 15 per cent, were correspondingly light.

A question which has received some comment in the literature, and which was referred to in our introductory remarks, is the length of time required for immunity to develop, if *B. pertussis* vaccine actually does protect. In Table IV the exposures and cases are classified in relation to the interval between the completion of vaccine injections and the exposure to whooping cough or the onset of disease.

Of the 4 cases in the test group, 1 occurred between 1 and 2 months, 1 at 5 to 8 months, and 2 at 9 to 12 months after completion of the vaccine injections. The 58 exposures not followed by whooping cough are well divided among the different periods. The data do not justify any conclusion. From certain of our experimental data not yet published we know that the opsonins as well as agglutinins usually appear during the course of vaccine

TABLE IV

EXPOSURES TO WHOOPING COUGH AND SUBSEQUENT CASES IN RELATION TO TIME SINCE THE LAST DOSE OF VACCINE

	Number of Exposures						
Result of Exposure to Whooping Cough	*Months Since Last Injection*						
	1–2	*3–4*	*5–8*	*9–12*	*13–18*	*Total*	*Totals*
Followed by cases:							
Definite exposures	1	0	1	0	0	2	4
Unknown exposures	0	0	0	2	0	2	
Not followed by cases:							
Definite exposures	3	3	7	11	4	28	58
Indefinite exposures	9	3	3	9	6	30	
Totals	13	6	11	22	10	..	62*

* These 62 exposures are for 60 individuals; in all other tables, the exposures have indicated individuals.

injections and reach a relatively high level soon after the 4th and frequently after the 3rd injection. However, we are unable to correlate these circulating antibodies with protection.

SUMMARY AND CONCLUSIONS

A progress report has been made on a pertussis immunization study in Grand Rapids, Mich.

The series to date includes 1,592 children—712 in the test group, and 880 in the control group. In the whole series there have been 67 cases of whooping cough, of which 63 occurred among controls.

The data presented suggest that an active immunity has followed the injection of *B. pertussis* vaccine under the conditions described. However, before a proper evaluation can be made of the data or definite conclusions drawn, it will be necessary to increase the number in our study and to await the accumulation of follow-up data over a longer period.

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The Health Conservation Contest*

Why a Rural Contest?

WATSON S. RANKIN, M.D., F.A.P.H.A.
The Duke Endowment, Charlotte, N. C.

WHY a rural contest? In the first place, to stimulate and promote a larger interest, a fuller understanding, and a more general use of the standards of public health practice on the part of the health officers. There are minds that rebel against standards, against established order, mental attitudes inconsistent with their own intelligence, through which they know that the primitive type of man had no standards, that standards came as civilization advanced, that from cave man to creative genius, all along the millennial way, the progress of civilization has been marked by group thinking and group expression of values—the pound, the mile, the year, the degree centigrade, the volt, the unit of potency, standard laboratory procedures, standard milk and standard water analyses, all of them expressions of group judgment, bringing order out of the chaos of individual thought and establishing the principle of comparative values.

The American Public Health Association during the last 12 years has given a great deal of thought and expended a considerable sum of money for the purpose of developing and establishing standards of public health practices for the guidance and for the protection of health officers. The Association in this undertaking called to its aid an exceptionally able committee, on which was represented the very best in thought and practice of our Association.

When the Association had acquired successful experience in the development of standards of municipal health department practices and received the endorsement and commendation of the leading municipal health officers for this work, it then undertook, through an able sub-committee, the development of standards for the guidance and the protection of county health officers.

These committees, with large experience in the field of public health and with a full understanding of the problems and methods of health officers, were not willing to develop a set of standards for municipal and county health department practices based upon any preconceived notions, upon theoretical or idealistic considerations, but proceeded, with funds provided for them and with the assistance of officers of the U. S. Public Health Service, to make a careful and very extensive survey of the work of city and county health departments throughout the United States. As a result the committees were able to find and to use actual accomplishments for their standards. To illustrate: Four or 5 cities seemed to have developed extensive and effective programs for the control of tuberculosis. The accomplishments in that particular field of those 4 or 5 best

* Read before the Health Officers Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 8, 1935.

departments served as a basis for the standards of tuberculosis control. Five or 6 other cities appeared to the committee to be outstanding in communicable disease control, and so the work of these 5 or 6 cities served as a guide for establishing standards for epidemiological procedure. Other cities were found to be doing excellent work with other divisions of the public health problem, venereal disease control, school hygiene, prenatal work, etc., etc., and in all cases the excellent in actual practice was used in the setting up of tentative standards. Again in the field of county health work the primary step was to ascertain actual accomplishments and, on the basis of practical attainment, to set up tentative standards for county health departments.

Then the committee took another very essential step: It submitted the tentative standards, built out of the actual practices of health departments, to representative groups of health officials, as, for example, the health officers of Ohio, the health officers of Michigan, and others, for their consideration, criticism, and revision; and so group judgment grew by accretion.

The next step in the evolution of standards was an actual field try-out by many health officers of the standards of public health practices in the budgeting and planning of the work of their departments. In the light of the field try-outs, further revisions were made, and in the light of actual experience in the field these health department standards were revised every third year.

I repeat that the purpose of the Association in the development of standards of health department practice was two-fold: (1) for the guidance of health officers, and (2) for the protection of health officers.

For the guidance of those health officers who desire to plan and budget their departments according to the carefully considered and organized thought of professional leadership; for the guidance of those health officers who know how to use the objectives of group judgment with their legislative bodies and boards of health in pointing out the needs of their departments and relating those needs to budgetary allotments; for the guidance of those health officers who feel the need of a yardstick of group judgment with which to measure the progress of their departments from year to year; for the guidance of those health officers who recognize the value of a means of tuning in and comparing the work of their health departments with the work of other health departments. So these standards serve as guide-posts, pointing direction and measuring the progress of those who are on the way.

For the protection of health officers against the uncertainties of partisan politics, these standards of group judgment have inherent in them, for those who will make use of them, great protective strength. The health officer familiar with the use of the standards of public health practice, the work of whose department is planned in line with the collective thought of his profession, whose achievements can be measured with exactness in terms of established professional values, has an avenue of appeal from political opinions and prejudice to a court of sound professional judgment, if he cares to use it; whereas the health officer whose work is not so organized and measurable in terms of professional standards has little protection against the whims and prejudices of politics. The further development of municipal and county health work on a basis of sound group judgment measurable by professional standards will prove to be, in all probability, the major factor in lifting public health administration out of the slough of politics to the high ground of professional achievement. Moreover, if public health work can be divorced

from politics, we will have taken a long step in the solution of one of the most difficult and pressing problems of the Association, namely, the limited compensation and the uncertain tenure of office of health officials.

In the development of standards of public health practice for the guidance and protection of health officers, the American Public Health Association found an understanding friend and able ally in the U. S. Chamber of Commerce. A number of years prior to the work of the Association in synthetizing and crystallizing the collective thought of health officials into standards for measuring progress and making comparisons, the fire insurance people had interested the fire departments of cities in establishing a set of reasonable standards for the guidance of city fire departments. In the development of these standards for fire prevention work the U. S. Chamber of Commerce had combined forces with the National Underwriters Association to the end of interesting the chamber of commerce, the business and industrial leaders of the cities, in the work of their fire departments, and through that interest bringing better support to city fire departments. With this background of successful experience, the U. S. Chamber of Commerce in 1929 entered into an arrangement with the Committee on Administrative Practice to interest chambers of commerce by offering awards to local chambers of commerce for excellence in the work of their city health departments. The purpose of this coöperation between the U. S. Chamber of Commerce and the Committee on Administrative Practice in sponsoring this annual contest was to broaden the interest and enlarge the support of the business organizations of cities in the activities of their health departments.

The effect of this contest over a period now of 6 years has been most gratifying. During the 6 years a total of 371 individual cities have been enrolled in these contests. For the purpose of making the awards, cities are divided into 6 classes: Class 1, cities with populations of 500,000 and over; Class 2, cities of from 250,000 to 500,000 population; Class 3, cities of from 100,000 to 250,000 population; Class 4, cities of from 50,000 to 100,000 population; Class 5, cities of from 20,000 to 50,000 population; Class 6, cities of under 20,000 population. In each group a first prize is awarded, a beautiful bronze plaque. A maximum of 5 certificates of award to the next highest ranking cities of the group are presented. The following cities from the various groups have received first awards during the 6 years of these annual contests: Milwaukee, Wis., Syracuse, N. Y., Detroit, Mich., Newark, N. J., Rochester, N. Y., New Haven, Conn., Baltimore, Md., East Orange, N. J., Brookline, Mass., Hackensack, N. J., and Palo Alto, Calif., 2 awards each; and White Plains, N. Y., Racine, Wis., Cincinnati, Ohio, Schenectady, N. Y., Honolulu, T. H., Pasadena, Calif., Sidney, Ohio, Alhambra, Calif., Lodi, Calif., Evanston, Ill., LaSalle, Ill., Chestertown, Md., and Hartford, Conn., 1 award.

Any city winning first award twice is placed in a special group and if it maintains its previous high record is given a special certificate. In the contest last year 214 cities, with a total population of 23,000,000, were enrolled.

The city contest having proved a success and the sub-committee on standards for county health practices having completed its special studies and having developed an appraisal form for measuring the work of county health departments, the contest was broadened in 1934 to include the work of county health departments. Last year, the first year of the rural contest, 105 of approximately

200 then eligible full-time county health departments in the United States were enrolled, these 105 counties having a total population of approximately 6,000,000 people. For the inter-county contest the United States was divided into 6 districts, because of variations in the content of rural health work in the different sections of our country, and prizes and honorable mention were awarded to the best county health departments in each of the 6 districts. Twenty-seven awards were made to the 16 states represented. Tennessee, Michigan, California, and New York lead with 3 awards each; Maryland, Mississippi, and Washington had 2 awards each; Florida, Georgia, Iowa, Kansas, Massachusetts, North Carolina, South Carolina, Texas, and West Virginia received one award each.

And now to come back to the previous question, Why a rural contest?—I wish to make clear that the purpose and the effect of the rural contest, like the city contest, is to establish the work of the health departments of this country on a sound professional basis of group judgment, with the elimination, to a considerable extent, of political influences and uncertainties that undermine and destroy health departments, and to bring to the support of local health departments, a larger interest, a clearer understanding, and more adequate support on the part of the people they serve. And because this is the purpose and this is the effect of the extensive application of the standards of group judgment in the measurement of the work of health departments, I conclude with an earnest, urgent appeal to every state health officer, to every municipal health officer, and to every county health officer to give to these contests their loyal and unstinted support.

Scientific Knowledge

"MODERN scientific research, in spite of its professed aloofness and disregard of human feelings and motives, has succeeded in unfolding to our gaze so new a world in its origin, development, workings and possibilities of control in the interests of human welfare, that practically all of the older poetic and religious ideas have to be fundamentally revised or reinterpreted. Scientific knowledge, ingeniously applied and utilized by inventors and engineers, has, with the assistance of business men and financiers, metamorphosed our environment and our relations with our fellow men."—James Harvey Robinson, *The Humanizing of Knowledge*, 1924.

The Health Conservation Contest*

Getting Financial Aid

THOMAS J. McCAMANT, M.D.
Director, El Paso-Hudspeth-Culberson County Health Unit, El Paso, Tex.

DEPRESSION, relief, and aid, are words that have been in recent years worked overtime. So "getting financial aid" is rather a common term, but "increasing financial aid" is almost a new phrase. During the past 3 years the amount of money appropriated for health work has been greatly decreased when, according to all laws of obligation and necessity, it should have been increased.

Fortunately, I have directed a health unit that has been successful in gradually securing an increased appropriation each year. I believe all health units could have been equally as fortunate had they used similar tactics. What we have accomplished has been done by a complete system of health education—making the whole population a part of our unit and keeping them thoroughly posted as to what we are doing as well as our plans for future improvement in public health work. In this work the press has willingly rendered valuable assistance.

Organization, results, and publicity will enable any health department to secure an increased budget provided they are giving service value for money expended. In the beginning of our service, under the new unit, we instituted the publication of a monthly health bulletin, mimeographed by my secretary, and in this we publish one or two leading articles by some member of the local medical, dental, or nursing societies. We also publish the reports of our special activities, our monthly report, and an evaluation of money expended. We show the production ratio, that is, the value received for money expended at the nominal prevailing price.

In July, 1933, all health departments of our city and county were united under one director with a budget of $46,870. The personnel at that time included 18 whole-time and 2 part-time employees. Of these, 10 were public health nurses. We secured donations from outside sources as follows: two large industries, $1,200; the Public School Board—$3,250; making a total of $51,320. In 1934 our budget was increased to $51,282, which donations brought it to a total of $58,000. With this increase we made a proportionate increase in personnel and enlarged our nursing staff to 15. In 1935 the budget was increased to $58,723 with $1,200 from large industries, approximately $400 from the American Red Cross, and $4,500 from the Public School Board, making a total of $64,823. We increased our personnel to 39, 20 of whom are public health nurses. We are asking, and hope to receive for 1936, $70,000 from the General Tax Fund. Ninety per cent of our expenditure is for salaries.

We have increased our personnel

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and added new departments to our activities until today we have a complete health unit covering practically all the fields of public health work.

Our policy has been that, as the public pays the bill, the public is entitled to know the expenditures and accomplishments of the health department. We have brought this educational system about by taking an active interest in the selection of the different boards and committees that function with the health unit.

We have assisted in the selection and formation of:

1. The legal Board of Health of 7 members meeting monthly. We were instrumental in having men of renown and influence named on this board, which is composed of 4 physicians, 1 dentist, and 2 laymen. The mayor names 2 physicians, the El Paso County Medical Society 1, the medical staff of the City-County Hospital (charity) 1, the El Paso County Dental Society names a dentist, and the Commissioners Court and City Council each name a representative to attend these meetings in order that they may be thoroughly familiar with the activities and accomplishments of the City-County Health Unit.

2. A Public Health Committee named by the Chamber of Commerce which meets monthly, except during the summer.

3. An Advisory Health Board composed of a representative from every civic and welfare organization in the city, comprising about 40 members and meeting quarterly. The object of this board is to advise with the Health Department and carry to their respective organizations the complete report of the work done by the Health Department.

4. A Public Health Committee named by the medical, dental, graduate nurses and local chapter of engineers for their own specific organizations. All employees of the Health Department must be actively affiliated with their own professional organization; in other words, we have attempted to make public health work a part of the professional and civic life of El Paso.

5. A Public Health Committee from the Mexican Welfare Organizations. Sixty per cent of our population is Mexican, and 80 per cent of the money expended for public health work is for the Mexican people; therefore, through this Mexican Public Health Committee, we have included the better class of Mexicans as part of our health and welfare organization, making them shoulder some of the responsibility for the health deficiencies of their own race. They appoint committees to attend our health centers regularly to welcome the Mexican people and make them feel at home, and at times serve refreshments. They have secured the services of 25 girls from the senior class, Mexican High School, who on afternoons after school and Saturdays distribute literature throughout the Mexican part of the city, making contact with mothers and householders.

6. A mutual agreement and thorough understanding with the medical, dental, and nurses organizations, as well as the local chapter of engineers, making them a part of our health service and guaranteeing them consideration and protection according to the interest they manifest in health work.

7. A communicable disease consultation service—free to the entire medical profession, including complete laboratory service.

8. A publicity and speakers bureau. We furnish speakers for all of the Parent Teacher Associations, the civic and welfare organizations, and even to the churches. These speakers talk on some topic or subject of local health interest.

We make our tentative budget with the assistance of the Board of Health.

This budget is submitted, with detailed report of the work accomplished during the current year and our program for the coming year, with emphasis on any increase in budget requested, setting forth reasons therefor (infant death rate, tuberculosis death rate, prevalence of venereal diseases) to the Board of Health of the Chamber of Commerce; then, through their aid, it is submitted to the Tax and Economy Committee of the Chamber of Commerce. Their approval is secured and it is then endorsed, with any comment, by the Advisory Health Board and a committee is selected by the Chamber of Commerce and the Advisory Health Board to present it to the City Council and Commissioners Court.

We have been fortunate in building up a loyal, faithful, efficient personnel, which gives earnest attention to minute details and is vitally interested in the welfare of its unit and takes a personal pride in its progress. We have our own building and each department has its own quarters and supervisor. Records are kept of the efficiency of each department, and these records are compared from month to month. Our statistical department is used extensively in this work and is most valuable. If we obtained first place in the Rural Health Conservation Contest in 1934 when we were only 6 months of age "look out" for us in 1935—El Paso-Hudspeth-Culberson County Health Unit, El Paso, Texas, is *coming!*

Specialization

"EVERY field of human knowledge is so cast that the workers therein are driven, in their endeavour to see things as they really are, further and further into details of their subject.

They then easily forget the profound truth enunciated by Buckle that the science of any subject is not at its centre but at its periphery where it impinges upon all other sciences. So the living organism of human society as a subject of inquiry has been torn apart and parcelled out among specialists."—Charles Beard, *The Economic Basis of Politics.*

The Health Conservation Contest*

School Medical Services, Davidson County, Tenn.

JOHN J. LENTZ, M.D.
Health Officer, Davidson County, Tenn.

IN 1930 there were 38,000,000 children of school age in the United States, of whom 24,000,000 were in attendance. A negligible proportion of these were in the numerous private schools, while the rest were being cared for in public schools. The growth of the public school and the educational services which it renders has been one of the most important features of American life, and yet, the now unquestioned obligation of the state to furnish its citizens with an education was at one time a subject of bitter debate. The compulsory education laws which now prevail are the final step in the assumption of this responsibility.

We now come to the important obligation to assure the physical well-being of the children, which devolves upon the governmental unit presuming to segregate its children for a number of hours each day. School medical services are a logical extension of the public school system's control of the children, but just as there was at one time a reluctance on the part of the communities to assume their educational responsibilities, so there is now a like hesitation encountered by those who would try to care for the health of the school child. The time is at hand, however, when school medical services will be demanded in the same way that free education is now assumed to be a normal perquisite of every citizen.

School medical service is the proper function of the public health organization of the community. It should not be separated from other usual functions of a health department, but should be developed as a logical extension of the department's usefulness, and in correlation with its other activities. Communicable disease control, affecting so largely the school age group, should be an administrative division of the agency which has direct access to these children. Sanitation of school buildings, an essential to complete health service, is to be assured through the advice and coöperation of the health department sanitary engineer. Follow-up, through nursing visits, is not to be attempted by the nurse who is unacquainted with the public health problems of the neighborhood.

Davidson County, Tenn., has developed all its school medical services through the Davidson County Department of Health, which serves a population of 86,000, exclusive of the City of Nashville, and an elementary school enrollment of 12,284. A beginning in the school hygiene program was made 7 years ago, when an increase in appropriations made possible a more extensive program than one devoted to the essential sanitation and communicable disease activities. The

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scheme of operation was based on the Blue Ribbon Program, which, with various modifications, has had wide application throughout the country, and with little change our efforts have been directed along the same lines to the present time. The basic features of this plan being the correction of all remediable defects among the school children, the universal application of immunizing procedures for typhoid fever, small pox, and diphtheria, and training of the children in the habits of hygienic living in their daily routine.

The school administration of Davidson County is centralized in a County Board of Education which has sole charge of the operation of all schools in the county. It has, however, no statutory responsibility for the training in hygiene and the medical supervision of its charges beyond that which is covered by adherence to a state regulation requiring the teaching of hygiene for a certain number of hours each session. The Department of Health is established for the purpose of doing all things necessary for the preservation of the public health, by virtue of a special act of the Tennessee Legislature enacted for the purpose of providing a health department in Davidson County. Hence, there exists no agency officially designated for the duty of rendering school health services. This has the advantage that the activities of the County Department of Health do not come in conflict with those of any other official body, but at the same time it has no more than a voluntarily allowed privilege, granted it by the Board of Education, to carry out such activities in the schools as are in excess of those having to do with communicable disease control and major sanitary measures. That this arrangement has functioned so well is due to the fact that a distinct benefit to the schools has been demonstrated as deriving from the services rendered.

At the beginning of the program the school authorities were at best lukewarm in their response to the suggestion that any activity be incorporated into the school routine which would involve periodical interruption of regular teaching schedules. The teachers were in many cases uninterested in matters which did not directly bear on their classroom work, and which required that some specific additional duties be assumed by them. Many parents were extremely critical of the health officer for presuming to subject their children to a physical examination, and a number of private practitioners of the county were prone to discredit the examination findings reported by the Health Officer to the parents. Several factors have operated to bring about the present great improvement in this situation. Of these, one which has been of the greatest importance is the state-wide school hygiene program of the Tennessee State Department of Health. Another has been the influence of the George Peabody College for teachers, which includes in its required courses instruction in the methods and purpose of school hygiene activities. Valuable assistance in education and publicity and contribution of money and time has been rendered by the local Parent-Teacher organization.

A further and extremely important factor has been the development of the competitive feature of the program between individuals, and schools, particularly schools. This inevitable outgrowth of the type of program developed by us is acknowledgedly of debatable va.ue, and bitter criticism of this aspect of the work has developed each year. It has proved, however, to be of untold value in stimulating efforts for the correction of defects and the improvement of general hygiene in the schools. The fruit of the tree is the true criterion of its excellence. If diseased tonsils are removed as the result

of a child's desire to have "a Blue Ribbon the same as Jimmy's," and not because the parents realized the value of the procedure—what of it? The beneficial end result is the important thing. The educational influence on the children which is to be hoped for, must be allowed to develop by the weight of time and continued repetition, as it may not be forced into the educational scheme like arithmetic. Therefore no attempt has been made to amplify or direct changes in the regular classroom courses in hygiene.

The department examines every child in alternate years, or more frequently if need arises. The results of examinations are reported to the parents, with the recommendation that the family physician be consulted, and follow-up home nursing visits are made to stimulate corrections of defects. No medical or dental corrective work is carried out in the schools or in the offices of the department of health; all such work is in the hands of private practitioners or public clinics, who have contributed tremendously by free work and nominal fees. No part of the money donated for this work passes through our hands, and no reference to specified physicians and dentists is made by us.

SCHOOL HYGIENE PROGRAM
DAVIDSON COUNTY, TENNESSEE

School Year	*No. Schools Participating*	*School Enrollments Participating*	*Children Examined*	*Defects Found*	*Defects Corrected*	*Blue Ribbons Awarded*
1929–30	9	1,877	1,877	4,616	799	411
1930–31	74	10,255†	6,593	19,842	1,040	1,744
1931–32	100	12,292‡	11,139	14,672	2,602	3,694
1932–33	100	12,439‡	7,448	17,225	4,314	4,286
1933–34	104	12,525‡	6,268	11,725	3,578	4,005
1934–35	92*	Figures not available	8,330	9,084	4,431	6,658

* Consolidations reduced the number of schools
† Only white schools participated
‡ In these years there were approximately 250 pupils of institutional schools participating in addition to the county schools.

	School Enrollment—County Schools		
	White	*Colored*	*Total*
1933–34	10,749	1,535	12,284

The Health Conservation Contest*

Rural Tuberculosis, A Special Problem

REGINALD M. ATWATER, M.D., DR.P.H., F.A.P.H.A. (*Life Member*)
Executive Secretary, American Public Health Association, Formerly Commissioner of Health, Cattaraugus County, N. Y.

RURAL tuberculosis is a special problem. Whether one turns to the early studies on tuberculosis in the community or whether he inquires from present-day health officers, he is likely to be told that almost every adult person has a positive tuberculin reaction, indicating that at some time he has undoubtedly been exposed to and has acquired some tuberculous infection. This situation may still represent the case in large city groups. It is a significant fact that much of our information about these broader aspects of tuberculosis is based upon studies made in the larger cities.

It now seems perfectly clear that this picture of universal infection with tuberculosis does not correctly represent the situation in many rural areas where the population density is low. The evidence is adequate to show that there are typical rural districts where less than one-half of the adult population is tuberculin positive, and where the age curve of infection, as judged by this reaction, is very different from the city curve.[1, 2] A rather profound difference exists between the epidemiology of rural and urban tuberculosis. Rural tuberculosis may rightly be considered as a special problem worthy of separate consideration.

These rural characteristics of the disease may readily be appreciated in the tuberculosis studies made over a period of 12 years in Cattaraugus County, N. Y., an area with 72,000 population. The rural portion of this agricultural county averages only 32 persons per square mile and the scattered farm and village population includes relatively few individuals who show any sign whatever of previous contact with the disease.[1]

Since 1923 a specially intensive search for tuberculosis has been made in Cattaraugus County by the County Department of Health, with the advice and financial assistance of the Milbank Memorial Fund. It is apparent that this search has now identified practically all the clinically recognizable tuberculosis in the rural areas.[2] Unusually complete studies on the disease have been made by Edgar Sydenstricker and members of his staff.[2, 4] As of January 1, 1935, there were 39 positive sputum cases known to be in the county. Of these all but 6 have had sanatorium care. Home supervision is considered satisfactory in all but 2 cases. Deaths from tuberculosis are now almost invariably in cases long known to the official agency and the sources of the infection can be mapped out with an accuracy that is surprising to anyone familiar only with the picture in a city. No similar completeness appears to have been achieved in any

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urban group, perhaps because of the inherent difficulty of charting all the significant contacts of city life.

Other evidence of the fundamental rural difference in this disease can be shown by comparison of the trends in the death rate and the case rate of urban and rural areas.[4] A much lower prevalence has been consistently observed in Cattaraugus County than in most cities, reflecting the difficulty which the parasite finds in making frequent person-to-person contacts in the more sparsely settled districts.

It is apparent in Cattaraugus County that the heavy childhood infections come largely from exposure within the family. Of all tuberculosis in this area, somewhat less than one-half is traceable to this same familial contact. Extra-familial sources appear to be less important than in cities.

Because of this observed rarity of tuberculous infection in those rural areas having few open cases, it should be correspondingly easy to set up effective barriers against personal contact and thereby achieve a further reduction in the infection rate. Evidence is clear that the family contacts of recognized cases are much more likely than other persons to be positive reactors to tuberculin and more likely as well to have the disease in clinical form. All studies indicate that isolation procedures for positive sputum cases are much more significant in groups where exposure to mass infection is slight.

From this rural county the evidence is clear that so-called "natural infection" with the tubercle bacillus is dangerous. There seems to be ample reason for postponing childhood infection as long as possible. Systematic elimination of bovine tuberculosis and increasing pasteurization of milk have supplemented the other control measures in use.

Believing, as we do in Cattaraugus County, that it is doubly important in rural areas to recognize the disease early and to remove the active cases from their family contacts, it was natural to lay special emphasis on the systematic examination of all family contacts of diagnosed cases. Although this procedure is taken for granted in all good tuberculosis programs, it is surprising how often the effort is casual and how generally the search is limited to a small proportion of all contacts within the family. Persistent work toward the examination of all family contacts in Cattaraugus County has resulted under Dr. John H. Korns, the Director of the study, in reaching not less than 75 per cent of those persons exposed to sputum-positive cases. We feel sure that this is the first step in relative importance after the case is discovered. It is the most productive source for the discovery of other cases. Dr. Korns has shown that the cost of finding a new case of the disease among this group is less than one-quarter the cost of searching in the general population. It is therefore hard to justify any wider search for the disease until this most likely group has been thoroughly canvassed.

If there be funds available for further search beyond the completely studied families of cases, it is evident in Cattaraugus County that there are 4 most likely further sources of new cases:

1. Those whose occupation exposes them to irritating dusts, as stone cutters and cutlery workers in small village factories
2. Racial groups with special susceptibilities, like Indians and Negroes
3. Those of both sexes in the later years of adolescence
4. Young adult women

It must be true that very few rural health departments will have funds sufficient to carry out more than these indicated procedures with thoroughness. If they do have additional money there is the field of school children in the grammar grades and other

unselected groups of the public, but our experience in Cattaraugus County shows that these are unlikely sources of new cases, whatever the experience may have been in large city groups.

It has been found practical in Cattaraugus County to consolidate the county tuberculosis sanatorium of 40 beds (2 beds per annual death) with the activities of the health department outside the hospital which include consultations with physicians, diagnostic clinics, and home visiting by the county staff of public health nurses. There is better coördination and efficiency under this plan than when the responsibility for domiciliary and sanatorium care is divided.

Experience establishes the fact that in Cattaraugus County it is often unwise to hospitalize children with childhood type tuberculosis. There appears to be increasing agreement with this opinion elsewhere. By this plan of not hospitalizing childhood cases, the cost of the program is significantly reduced without impairing its effectiveness. Beds previously used to care for children have been changed to accommodate adult cases requiring sanatorium care.

From the economic standpoint it is believed that the policy in Cattaraugus County to make sanatorium care for tuberculosis a public charge without raising the question of ability to pay is in the long run a good public policy. Encouraging the use of a free consultation service by local physicians has been productive. The use of a portable X-ray unit without cost has contributed much to the accuracy of diagnosis.

It is perfectly clear from the records that tuberculosis in this particular county is declining in both morbidity and mortality and there are reasons to believe that relatively fewer persons at given ages are reactors to a standardized Mantoux test than formerly. With a death rate for the entire county which has averaged under 36 per 100,000 during the last 4 years, the disease is obviously becoming much less of a public menace. Even this remaining prevalence appears to be subject to elimination because of the very few remaining foci, the wealth of information about the sources within the county, the high degree of recognition of contact cases, and the completeness of hospitalization for open cases.

It is gratifying that this tuberculosis program, which was largely supported at first by funds from outside the county, has come to be accepted as a proper direction for spending public money. The annual cost of the program, exclusive of the public health nursing cost, now amounts to 64 cents per capita, of which all but 5 cents comes from the public purse, and it is a well accepted part of a generous provision for health purposes. Cattaraugus County people believe in this tuberculosis program.

When one assembles the observations of many workers in this subject he readily sees that this concept of tuberculosis as a different disease in rural areas is amply confirmed elsewhere. Nevertheless, these facts seem seldom to have been seriously applied in choosing the control measures for rural counties. We have gone on assuming that the best procedures were the accepted routines which had been worked out in the large city clinics and without special reference to the density of population; yet it frequently proves very costly to apply blindly these technics of tuberculosis control suitable for cities. In rural areas, as we have seen, the basic facts in the epidemiology of the disease are quite different. We can find more of the cases and control the disease more adequately with proven methods in these areas with low population density. By selecting our groups on the basis of rural

experience we can make a given effort produce greater results.

It is not difficult to understand why some county health officers have regarded tuberculosis as a disease clearly beyond their practical reach. There are so many insistent demands on the time of a rural health officer that a disease which begins insidiously, which is frequently symptomless in its early stages, and which runs a chronic course of 3 or more years in white persons, does not attract his attention as do the day by day acute conditions which shout for immediate attention. Tuberculosis too is regarded as in a separate category and as a disease requiring special diagnostic skill, an expensive routine and as a condition which, after all, is rather hopeless anyway.

I would challenge the rural health officer to choose any part of his work with the communicable diseases in which a given effort will yield larger results or have more significant social effects than the isolation of the open cases of tuberculosis and the search for new cases among the personal contacts of these individuals. Here is a productive opportunity that the average county health officer may very properly assume and from which he can draw genuine satisfaction because it is based on proven experience in rural districts.

It may be added that there is nothing in this picture of rural tuberculosis to prove discouraging to the health officer who takes his responsibility seriously. There are valid reasons for believing that efforts toward tuberculosis control in a rural area will bring even greater results than in a city. Certainly there is no apparent justification for the general attitude of *laissez-faire* in rural tuberculosis. The disease is still one of the most devastating enemies of the rural family from the health and economic standpoints. Although numerically not as many deaths are caused by tuberculosis as by some other diseases, the social significance of these deaths is very great, because tuberculosis takes its toll primarily among young adults and among the heads of young families.

It seems reasonable to assert that when rural tuberculosis is thus regarded as a special problem and is considered in the light of its own epidemiology, the control measures based on the actual situation can be made effective without undue effort. There is reason also to believe that the control of rural tuberculosis is one of the most productive measures from the social welfare standpoint that are open to the county health officer, rather than the opposite, as one would guess from studying what most rural health departments are doing. At any rate, Cattaraugus County feels that value has been received in full measure from the expenditure of about 40 per cent of its entire health budget for the control and cure of tuberculosis.

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Leprosy in the Philippine Islands*

GEORGE C. DUNHAM, M.D., DR.P.H., F.A.P.H.A.

Major, Medical Corps, U. S. Army, Technical Adviser on Public Health to the Governor-General, Philippine Islands; and Chairman, Philippine Islands Leprosy Commission, Manila, P. I.

THE control of leprosy in the Philippine Islands is based on a system of modified compulsory segregation and treatment under the control of the government. All known bacteriologically positive cases, the "open" cases, are segregated in the Culion Leper Colony or in regional treatment stations. At the present time there are 8,726 lepers in segregation, and of this number 7,134 are in the Culion Leper Colony.

Bacteriologically positive lepers who become bacteriologically negative are released, or "paroled," from segregation after a period of observation. A total of about 3,500 lepers have been paroled in the past 12 years. About 50 per cent of the paroled lepers eventually relapse, that is, again become clinically active and bacteriologically positive.

In accordance with the existing laws, all positive lepers are apprehended by public health officials and placed in segregation as soon as they are found. However, during recent years most of the new cases recorded have reported voluntarily, and a considerable number of them have proved bacteriologically negative and therefore entitled to treatment as outpatients, without segregation. While it is impossible to determine how many positive lepers remain undetected and at large in the general population, it is known that very few advanced cases have escaped detection. Segregation of positive lepers as now carried out in the Philippine Islands has been successful in removing most of the sources of infection, the positive lepers, from contact with susceptible persons.

Leprosy is seldom acquired by an adult. Children are susceptible and the disease is usually contracted during childhood, although diagnosable clinical symptoms may not appear until after many years. Therefore, the primary objective of segregation, from a public health viewpoint, is to prevent the transmission of the infection by contact from positive lepers to children. There are also economic and social factors to be considered. The public fear of leprosy is such that, except in quite rare instances, the known positive leper cannot earn a livelihood and is a social outcast. Under these conditions it becomes necessary for the government to support and care for them.

From time to time during past years there has been political agitation for modification of the methods employed in the segregation of lepers in the Philippine Islands. A part of the public has come to believe that leprosy is not infectious because it is but rarely transmitted to adults, and that lepers should not, therefore, be segregated.

* Abstract of Report by the Philippine Islands Leprosy Commission.

Others have advocated that, because leprosy can now be treated with some chance of success, lepers should be isolated in their own homes and treated by private physicians. Also, Culion Island, upon which the Culion Leper Colony is situated, is far removed from the centers of population of the archipelago, and the relatives of lepers segregated in the Colony find it difficult or impossible to visit the Colony. Several bills designed to modify the methods of segregation have been introduced into the Philippine Legislature during past years, but no bill of this nature was passed until 1935. In 1935 the so-called Nolasco bill was passed by the Legislature. This bill provided that positive lepers could be isolated in their own homes, that they could be treated by private physicians, and that they could be released from isolation after a very short negative period. Under the conditions existing in the Philippine Islands, effective home segregation, or isolation, of lepers over a long period of time would be impossible, and no practical method of home segregation would prevent contact between the positive lepers and susceptible persons. Such being the case, the Governor-General, who has absolute veto power, was compelled to veto the Nolasco bill. However, at the time he vetoed the bill, the Governor-General appointed a Leprosy Commission to make a careful study of the leprosy situation as it exists today to determine what modification, if any, should be made in the present control methods. The Leprosy Commission has reported the following conclusions *:

a. Leprosy is an infectious disease which is transmitted by more or less intimate contact.

b. The source of the infection is the bacteriologically positive leper.

c. Children are especially susceptible to infection with leprosy. For control purposes, adults may for practical purposes be regarded as immune, although cases where adults have acquired the disease have been reported from other countries.

d. Under conditions as they exist in the Philippine Islands, the segregation of bacteriologically positive lepers is and must continue to be the basis of all measures for the control of leprosy. The type of segregation employed should be that which will afford the necessary protection for the public and interfere as little as practicable with the rights of the leper.

e. The segregation of the individual leper in his own home is impracticable as a control measure in the Philippine Islands. Such a procedure would not in practice protect the family or the community from infection with leprosy. The environment created by home segregation would not be for the best interests of the individual segregated, and it would tend to have an adverse effect on the progress of the disease under treatment. Home segregation would permit the individual to remain with the adult members of his family, but this single advantage would be far outweighed and nullified by the many disadvantages.

f. Group segregation of bacteriologically positive lepers is the method of choice for the control of leprosy in the Philippine Islands. When properly carried out, group segregation affords the best environment for the segregated leper. It facilitates treatment which will delay the progress of the disease in the individual leper. Group segregation protects the general public from exposure to leprosy infection to a degree which could never be attained by home segregation under conditions which prevail in the Philippine Islands.

g. Group segregation should be accomplished by means of regional colonies, regional treatment stations, and leper hospitals for advanced cases.

h. Regional agricultural colonies should be utilized for the segregation of those lepers that are capable of engaging in agricultural work.

i. The basic pre-parole observation period for negative lepers in segregation should be 6 months, instead of 12 months. With a 6 month's basic pre-parole observation period there must be provision for adequate observation and treatment of the paroled lepers.

j. The present method of following up paroled lepers is entirely inadequate. Paroled lepers should be kept under a reasonably

* The report of the Leprosy Commission is being published in full in the *International Journal of Leprosy*.

close observation in order to insure that they receive proper treatment with a view to prolonging and making permanent the bacteriologically negative stage and to facilitate the prompt detection of relapsed cases in order to permit giving them adequate treatment and afford to the public protection from exposure to infection.

k. At the present time the policy of the Bureau of Health is to separate children born of leprous parents from their parents at the age of 6 months. Studies which have been made indicate that children who remain with their leprous parents during the first months of life are susceptible to and tend to acquire the disease. Children of leprous parents should be separated from their parents at birth and whenever possible, placed with non-leper relatives otherwise in institutions conducted by the government.

How Tuberculosis Spreads in a Rural Community*

JEAN DOWNES

Milbank Memorial Fund, New York, N. Y.

IT is a well established fact that human aggregation greatly facilitates the spread of diseases like tuberculosis which are transmitted by way of the respiratory tract. Consequently, a rural area such as Cattaraugus County, N. Y., with its population about equally divided between two small urban areas and scattered farms and villages, offers an unusual opportunity for observing the spread of tuberculosis under fairly simple conditions.

As a part of an epidemiological study of tuberculosis based upon observation of tuberculous families in Cattaraugus County, a special effort has been made to learn how the disease is introduced into the families of that rural area, and what proportion of the total active cases occurring in the community is made up of cases due to contact within the family, and what due to extra-familial contact. This particular problem has been studied by obtaining detailed data for the families of all new active cases reported during 3½ years, January, 1932, to July 1, 1935. Data on the following points were secured through visits to the home and interviews with patients in the sanatorium by an investigator especially trained for this type of work.

1. Date of birth was secured for each member of the family or household, date of death, cause of death, and place of death for any member who had died. This information was secured also for persons other than family members, who had lived in the household 3 months or longer.

2. A history of chronic conditions was obtained for each member of the family and other household members. Such conditions as bronchitis, chronic cough, asthma, and pleurisy, were asked about especially. Dates as to time and duration were stated for each condition.

3. A detailed history of contact with tuberculosis both within the family and outside was secured for each case. The dates, or period, of contact were noted and the intimacy of contact described in detail.

4. A history of symptoms was secured for all cases of tuberculosis in each family and for any other member of the family who had had symptoms.

5. Serial X-ray examinations were secured for as many members of the families as possible.

6. A family history was recorded for the husband and for the wife in each family. This consisted of the same information described for the tuberculous families as in (1) to (4) for the brothers and sisters and parents of both husband and wife.

It is believed that the data obtained

* Read at a Joint Session of the Public Health Nursing and Epidemiology Sections of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 9, 1935.

from these investigations give a clear picture of the family in respect to tuberculosis. The history of chronic conditions among members of the family or household and data concerning cause of death and age at death minimize the possibility of missed cases in the family as sources of infection for the first known case.

For each active case of tuberculosis the history of contact within the family and outside was secured in great detail and with the utmost care because of its importance in tracing the source of infection. Cases outside the family given as contacts of a case in the family being studied were investigated, either through the records of the County Department of Health or through correspondence and visits, to determine whether or not the possible source was a bona fide case of tuberculosis with a positive sputum. If the information concerning the extra-familial contact was inadequate and there was no case of tuberculosis in the home, the source of infection was classified as unknown.

Even though the history of extra-familial contact is secured with the greatest care, the question may be raised as to the validity of attaching significance to a known extra-familial contact as the source of important infection when there may be chances of repeated doses of tubercle bacilli through ordinary casual contact in the community. It seems safe to assume that in the rural area under consideration, the chances of encountering repeated doses of tubercle bacilli through casual contact in the community are at a minimum.* Special surveys have revealed a low rate of tuberculous infection. In 1930, only 7 per cent of 453 children aged 5–19, attending one-room schools in 18 rural towns, had a positive reaction to the intracutaneous test with 1 mg. of Old Tuberculin; 13 per cent of 650 children attending village schools in the same areas had a positive reaction; and 17 per cent of 439 children attending high school and grade school in an urban area of 9,000 population was positive to tuberculin. In addition, 529 persons from 20 to 69 years of age drawn from one village and the surrounding countryside were given the tuberculin test, and an average of 56 per cent showed a positive reaction. The proportion of children and adults from these groups showing by X-ray either calcified lesions or fibrosis was extremely low.

SOURCES OF INFECTION OF ACTIVE CASES OF TUBERCULOSIS IN THE COMMUNITY

The families of the total 105 new active cases of tuberculosis reported or discovered during the period January, 1932–July 1, 1935, were investigated according to the procedure outlined above. In only 34 per cent was there evidence of familial contact as the source; for approximately 40 per cent the source of infection was unknown. These persons either knew of no contact, familial or extra-familial, with the disease, or were classified as unknown because of inadequate proof of contact with an infectious case. Careful examination of the information obtained from the family concerning causes of death and chronic illnesses among the present and the past generation, and examination of the clinic records for family contacts have led to the conclusion that the family as a source of infection for all of the cases classed as unknown can safely be excluded. This leads to the conclusion that approximately 66 per cent of the total incidence of tuberculosis in this community is made up of cases in which the source of infection was outside the family. Thus

* The chances of acquiring tuberculosis in Cattaraugus County through tuberculous cattle or milk seem slight. Cattle in the county have been tuberculin tested routinely since 1923. The rate of positive reactors has varied from approximately 5 per cent in 1923, to 0.85 per cent of those tested in 1930.

extra-familial contact is undoubtedly a more important factor in the spread of tuberculosis in a rural area than has been generally believed.*

Analysis of the 63 cases where the source of infection is known shows that tuberculosis has been acquired chiefly through contact in the small centers of life of the rural population, namely, the family, the factories and other work centers, and the schools.† Tuberculosis was introduced into the family also through association with a neighboring family in which there was active disease, through contact among intimate friends, or by a boarder who had tuberculosis and was living temporarily with the family.

THE SPREAD OF TUBERCULOSIS WITHIN THE FAMILY

Since the family contact makes an important contribution to the total incidence of tuberculous disease in the community, it is of interest to consider the spread within the family. This can be shown most strikingly by the incidence of secondary cases with clinical symptoms among 334 contacts in a group of 83 families carefully observed over a period of years.‡ The primary case in each of the 83 families was one of active adult pulmonary tuberculosis and was selected from the total active cases which were reported during the period 1923–1930. The family contacts were observed from 3.5 to 12 years, with an average of 7.2 years of observation after the onset of the primary case.

Twenty-eight cases of active tuberculosis with clinical symptoms occurred among the 334 contacts in the 83 families,* an average rate of incidence of secondary cases of 1.1 per 100 person-years.† A comparison of this rate with the average annual incidence of active tuberculosis by age for the total population of Cattaraugus County shows that the risk of contracting serious tuberculosis was 13 times greater for all family contacts than for persons in the community at large, with an even greater risk for persons under 20 years of age exposed to contagion in the family.

Undoubtedly, the members of tuberculous families have a definitely higher personal risk of contracting the disease than other individuals in the community; nevertheless, the data concerning the nature of the total community incidence seem to indicate that for every active case resulting from a familial contact there are 2 in the community as a result of extra-familial contact. The risk for the general population is less because that particular universe is many times greater than that formed by the family, but the spread of serious tuberculosis from an infectious case into the community at large is at least equally as great as in the family.

The age incidence of secondary cases

* Myers, in discussing tuberculosis as a family disease, notes the fact that the disease is sometimes introduced into the family through contact with tuberculosis outside the family.[1]

† Brachman, in an analysis of a tuberculin survey among 35,000 students in Detroit, found more tuberculosis in the high school age group in one school in the city. His conclusion was that perhaps one or more students in that particular school were infecting others.[2]

‡ The procedure for investigating the 83 families was identical with that described for the families of the 105 new active cases reported during the period January, 1932–July 1, 1935.

* The 28 secondary cases of tuberculosis evidenced definite activity with clinical symptoms. Nineteen were classed as adult pulmonary tuberculosis; 12 of the 19 were known to have positive sputum. There were 4 cases of tuberculous meningitis, 3 cases of tuberculous osteomyelitis, 1 case of tuberculosis of the kidney, and 1 case of tuberculosis of the cervical lymph nodes. Fourteen, or 50 per cent, of the 28 patients died of tuberculosis within the period of observation.

† The method of using the contacts as a population base was to consider each year of life of the exposed persons as a unit and the total population or person-years derived in this manner represent years of life after the factor of exposure to familial tuberculosis has been introduced. Person-years for the contacts were counted from the onset of the primary case to July 1, 1934. The method is explained in greater detail in the following article: Downes, Jean: A Study of the Risk of Attack Among Contacts in Tuberculous Families in a Rural Area, *The American Journal of Hygiene*, November, 1935.

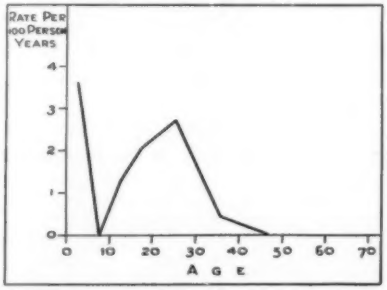
with clinical symptoms, as shown in Figure I and Table I, is of importance

TABLE I

AGE INCIDENCE OF SECONDARY CASES OF ACTIVE TUBERCULOSIS IN 83 TUBERCULOUS FAMILIES, CATTARAUGUS COUNTY

Age Group	*Rate per 100 Person-Years*	*Number of Secondary Cases of Active Tuberculosis*	*Number of Person-Years Observed at Each Age*
0– 4.....	3.6	5	137
5– 9.....	0	0	304
10–14.....	1.3	4	309
15–19.....	2.0	6	301
20–29.....	2.7	12	441
30–39.....	0.4	1	279
40–49.....	0	0	279
50–59.....	0	0	234
60+.....	0	0	189

FIGURE I



because it indicates the ages at which tuberculosis among family contacts occurs most frequently. At ages 0–4 the incidence is 3.6 per 100 person-years, the highest found in any age group. At ages 5–9 the rate is zero, then rises to 1.3 at 10–14 years. The frequency of cases in the next age period increases rapidly and reaches a second peak at ages 20–29 with a rate of 2.7 per 100 person-years. The high incidence of tuberculosis among infants and children of preschool age in tuberculous families is a well known fact. The tendency for children who have had intimate exposure to tuberculosis to develop the disease at the teen ages is also generally recognized. But the second peak of incidence of active disease at ages 20–29 is of especial significance since insufficient emphasis has been placed upon the periodic examination of family contacts over 19 years of age, and these young adults are frequently establishing new family units which offer the possibility of a further spread of tuberculosis.

THE SPREAD OF TUBERCULOSIS THROUGH EXTRA-FAMILIAL CONTACT

Since a large proportion of the active cases believed to be due to extra-familial contact with tuberculosis are unknown as to the type of contact, that is, work, school, neighbors or other friends, it is difficult to rank the various types as to importance with any degree of certainty. However, for those cases where the source of infection is known, work contact seems most important in this rural area. Contact among school friends, neighbors and other friends as a means of spread of tuberculosis occurred with about equal frequency, but these types seem to be slightly less important as a source than work contacts.

In Cattaraugus County there are a number of small industries in various villages which have definite occupational hazards to health. These are cutlery factories and monument works. It is recognized that grinding and work with granite offer special hazards to the lungs, and the breakdown of lung tissue due to silicosis would produce a favorable condition for the lighting up of an old tuberculous process; nevertheless, it is believed that there has been a spread of tuberculosis from contact in some of these plants. For example, in a small cutlery factory where an average of 30 men have been employed as grinders throughout the past 13 years, 17 cases of known active pulmonary tuberculosis with 9 deaths

have occurred during that time. On the other hand, in a cutlery factory in a nearby village, where hygienic measures in regard to spitting and general cleanliness were put into practice 10 years ago, only 1 case of active tuberculosis has been known among the grinders within that period.

The possibilities of the spread of tuberculosis by means of extra-familial contact of other sorts may best be illustrated by showing examples. Figure II shows the spread of tuberculosis among neighboring families. Individuals in the family are indicated on the chart as males or females by the sex signs used in genetic charts. Age is recorded for each individual in the family as at the time of onset of the active case. Family A consists of husband, wife, and 1 child, a daughter. The wife developed pulmonary tuberculosis with positive sputum at age 23. The daughter was 7 years of age when exposed to the mother. Family B lived in the house next to Family A. The wife in Family A, the primary case, was especially interested in the twin girls aged 13 in Family B, and they visited her very often while she was ill. One of the twins died of tuberculous meningitis within a year after exposure to the primary case, and the other developed adult pulmonary tuberculosis with a positive sputum. The 9 year old daughter in Family B who developed tuberculosis was also exposed to the primary case in Family A, but it is questionable whether or not the exposure to her own sister was more important.

FIGURE II

SPREAD OF TUBERCULOSIS AMONG NEIGHBORS

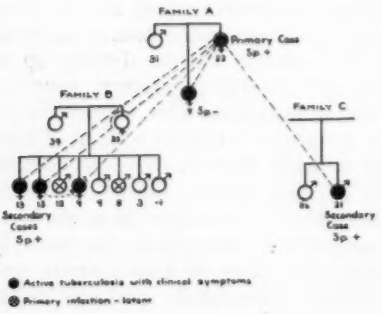
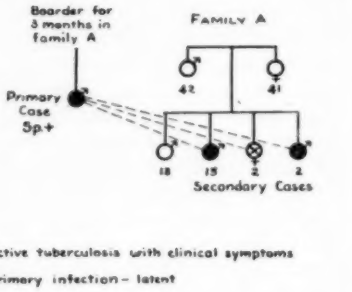


FIGURE III

SPREAD OF TUBERCULOSIS FROM BOARDER IN HOME OF FAMILY A



Family C consists of 2 men who were distant cousins of the husband in Family A. Both parents were dead but neither died of tuberculosis. The male aged 21 who developed tuberculosis was in the home of Family A when he had an attack of influenza and the wife in the family nursed him for 3 weeks. At that time she was believed to have had tuberculosis for at least a year. Two years later he developed pulmonary tuberculosis with positive sputum. All of the contacts in the 3 families have been X-rayed periodically and there is no other tuberculosis in these families except as indicated on the chart.

Figure III shows the spread of tuberculosis from a boarder who had positive sputum and lived 3 months in the home of Family A. Two of the children, one a male aged 15 and the other a male aged 2, developed tuber-

culous osteomyelitis a year after the boarder left the home. The twin sister aged 2 had a lesion of primary infection demonstrable by X-ray. All other contacts have been examined periodically with negative findings. The possibility of tuberculous cattle or milk as a source was investigated with negative results.

FIGURE IV

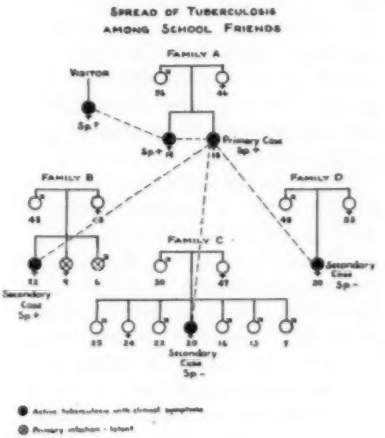


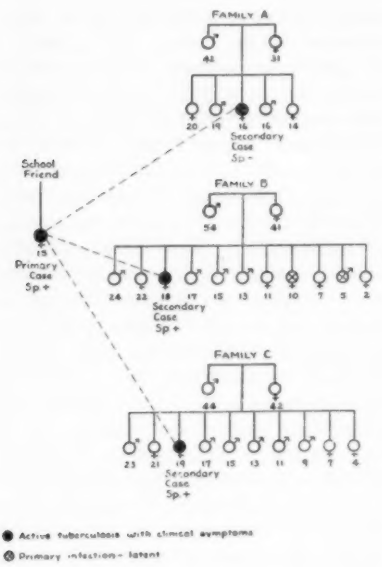
Figure IV shows the spread of tuberculosis among school friends. The contact of the secondary cases in families B, C, and D, with the positive sputum primary case in Family A occurred during the senior year at high school. It is believed that tuberculosis was introduced into Family A by an adult with chronic tuberculosis who visited frequently in the home for periods varying from 3 days to 2 weeks during 4 consecutive years previous to the onset of tuberculosis in the 19 year old daughter. One year later the younger sister developed tuberculosis at the age of 18. She continued to attend school with occasional absences throughout 10 months of her illness. The secondary case in Family C and the one in Family D were her most intimate friends both in school and outside of school. The case in Family B was a contact in school only. These secondary cases developed active adult pulmonary tuberculosis within a period of 4 years after exposure to the primary case in Family A. All of the contacts in these families except the parents in Family A have been examined, and there was no other tuberculosis found except that indicated on the chart. This chart is a striking illustration of the fact that as a result of one case in Family A, tuberculosis has been introduced into 3 other families in the same community with further possibilities of spread among the family contacts.

Figure V is similar to Figure IV in that it demonstrates the spread of tuberculosis among school friends but in another part of the county. All of the secondary cases shown in Figure V developed tuberculosis within a period after exposure to the primary case similar to that found for the cases in Figure IV, namely, from 1 to 4 years. Families A, B, and C have been under supervision for a period of from 5 to 10 years. Though all of the contact members of families B and C have acquired infection demonstrable by the tuberculin test, and 2 members of Family B have a lesion of primary infection visible by chest X-ray, no case of active tuberculosis with clinical symptoms has developed among them. The 3 cases spent most of the period of infectiousness in sanatoria. All available evidence indicates that the secondary cases in families A, B, and C were actually the first cases to occur in these families and that the source of infection was an extra-familial contact.

From the data presented it is evident that both familial and extra-familial contact are important factors in the spread of tuberculosis in a rural community. Administrative procedures for the control of tuberculosis are planned mainly around the tuberculous family,

FIGURE V

SPREAD OF TUBERCULOSIS AMONG SCHOOL FRIENDS



but it seems obvious that to meet the community problem adequately some emphasis should be placed upon the examination and supervision of the extra-familial contact. The data indicate that the spread of serious disease from the tuberculous family into the larger universe, the community, is at least as great as within the family. The question is how to select from the community those individuals who have had a relatively intimate exposure to tuberculosis.

An attempt to meet the problem is being made in Cattaraugus County. During the past year and a half histories similar to those described in this study have been secured for all new active cases of tuberculosis diagnosed or reported. The purpose of the history is explained to each case as a part of the program of preventive work. If the active case is found to have positive sputum, the more intimate extra-familial contacts are asked to have a clinic examination; if the sputum is negative no extra-familial contacts are examined unless the source of infection for the reported case is being sought among them, and then only after the family as a source has been eliminated. The intimacy of contact, the results of the chest X-ray and tuberculin test, and the age of the individual are the criteria used to determine the necessity of further periodic follow-up and examination for the extra-familial contacts.

The response to this program of preventive work in tuberculosis has been most favorable both on the part of the individuals who have tuberculosis and the contacts outside of the family who have been asked to have a clinic examination. None of the extra-familial contacts who have been asked to have a clinic examination has refused to do so. However, the full effectiveness of such a program cannot be measured until more data are available.

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Acknowledgments are made to the Cattaraugus County Department of Health, especially to Dr. John H. Korns, Director of the Bureau of Tuberculosis, who has coöperated in making the study and to Mae P. Duffy, who was responsible for the collection of the information from the tuberculous families. Acknowledgments are made also especially to the families in Cattaraugus County who have so generously participated in making the study possible.

DISCUSSION

GRACE ROSS, R.N., F.A.P.H.A.
Superintendent of Nurses, Department of Health, Detroit, Mich.

MISS DOWNES'S paper is a fine example of what the private foundation can do for science and for the community in underwriting thoroughly scientific studies which are placed in the hands of thoroughly competent directors and personnel. Such a careful study—careful because all of it could be done as thoroughly as ample time and money make possible—points out beyond question the equal importance of familial and extra-familial contact in tuberculosis work. A well rounded tuberculosis program should include provision for finding sources outside the family as well as within it. Miss Downes refers to Dr. Brachman's work. In the September *Journal of the Michigan State Medical Society,* he makes an even stronger statement than that she refers to, to quote: "Tuberculosis may be spread in places of employment, education or recreation, if necessary precautions are not carried out."

From the standpoint of public health nursing, Miss Downes's findings have great significance because in the usual urban health program the number of nurses is admittedly insufficient to do intensive work, and all effort should therefore be spent in carrying out the most productive policies. Miss Downes has proved that half the cases are missed if a program considers the immediate family contacts only.

In Detroit, where we are told we are blessed with more public health nurses than most communities have, by our very best efforts we have not yet succeeded in getting under supervision at the same time, more than 85 per cent of all the known contacts in the family. Where shall the follow-up work be, if it be impossible to finance a complete program? Whether family contact should be routinely extended to include all persons who have at any time lived with the family 3 months or longer, becomes a matter of dollars and cents. All these sources should be followed where ample money makes it possible, but in most agencies it becomes a matter of choosing between running down an old contact and visiting a new family where several known contacts are present. It would be helpful to know the real difference in the cost. Miss Downes states that 34 per cent of her new cases were exposed in the family, or 1.1 per 100 person years, and with a risk 13 times greater than that elsewhere. No other device is seemingly so productive of results for the amount of effort and money at hand. Miss Downes says, "for every active case resulting from a familial contact there are 2 in the community as a result of extra-familial contact," but this larger number of people in the community who must be reached in order to find the same number of sources, makes the latter an almost prohibitive method of approach for the average agency.

The urban nurse who finds it impossible to visit all the families indicated may find some time for following up possible sources outside of the family if she selects her visits more wisely. She can sort her families having positive cases, first according to the race or nationality having the highest incidence, as in Detroit the Negro "with his low constitutional immunity," and the Polish. In a recent case finding project [1] in the 11th and 12th grades 8,015 students were tested. As a result 1,861 positive reactors were X-rayed. The results for the 14 to

19 year age group show:

		Positive Reactors
In Whites	Males	29.3%
	Females	27.8%
In Colored	Males	53.0%
	Females	39.3%
Adult type was found:		
Of the White total		0.44%
Of the Colored total		0.84%

In two schools 75 per cent Polish, the adult type found was even higher—0.89 per cent of the total. Second, by selecting those families in districts of low economic status, and third by selecting those families in the overcrowded areas within those districts. This same project discloses 5.2 per cent more reactors in the area less favored economically.

Miss Downes's map showing the incidence of secondary cases of tuberculosis with clinical symptoms, among family contacts, is a most interesting one, and incidentally it is practically the only one to be found so far in the literature on the subject. According to it, family visits would take care of the second highest number of secondary cases, those which occur in the preschool age, 3.6 cases per 100 person years. It clearly indicates also the need of routine testing of high school and college students at which time "Adult type tuberculosis begins to appear more frequently." Detroit figures support this also. The number of students found to have adult type tuberculosis was 34. The Department of Health report for the same month (May, 1935) showed 122 patients in the city diagnosed as adult type. Of the latter, however, 84, or 69 per cent were favorable for treatment whereas among the students all were favorable for treatment. It indicates the great need for routine testing and X-raying of the group 20–29 years of age. The experience of the Detroit Health Department in testing in its clinic, children who are contacts likewise supports this. There has been a striking decrease in the incidence of positive reactors from 54 per cent in 1930 to 28 per cent in 1934. This 20–29 group is most easily reached as employees and should be, not only when entering industry, but upon reëmployment and yearly thereafter, especially in the hazardous occupations. Dr. Bruce H. Douglas makes the statement in his annual report as tuberculosis controller of Detroit: "There is little change to report in the percentage of early cases found among the adults. It would seem that if an increase in the percentage of early cases is to be made it will be necessary to get people who are supposedly well to have periodic examinations including testing and X-ray of the chest. Only in this way can these early cases be uncovered." As Miss Downes points out, if this be routinely done there would be immediately fewer cases in the preschool group.

Dr. Brachman agrees with Miss Downes when he says, "Modern case finding methods should be required in all places where people gather regularly, whether for work, play, or food," also in his recommendation that "boarders and lodgers should not be accepted, particularly in homes where there are children, without first having an X-ray of the chest." Nurses who have worked with our Polish neighbors realize what a handicap is created by their fear of hospitalization and of things medical. X-raying the boarder before he boards, is theoretically sound—but when he is a Polish boarder, the challenge becomes doubly so.

Some time we will hope to say with Miss Downes, "None of the extra-familial contacts who has been asked to have a clinic examination has refused to do so."

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Sanitary Significance of the Succession of Coli-aerogenes Organisms in Fresh and in Stored Feces*

LELAND W. PARR, PH.D.

Department of Bacteriology, Hygiene and Preventive Medicine, School of Medicine, The George Washington University, Washington, D. C.

THE past 3 years we have had under study the coli-intermediate (Citrobacter)-aerogenes organisms of normal human feces as they occur in fresh samples and in saline suspended specimens stored at 37° C. and in the ice box. Antecedent experience in the field of intestinal and sanitary bacteriology led us to believe study of such material might yield data of theoretical and practical value.

Early work carried out by MacConkey,[1] Clemesha,[2] and Jordan,[3] among others, has touched on the question of changes of flora in stored feces. Indeed Clemesha evolved a system of water bacteriology based on his work which is still largely followed in India. Developments and interests in this bacterial group have been such in the last decade as to warrant new and further study of any problem dealing with these organisms. Furthermore, recognition of a definite and important succession of forms in fresh fecal specimens is, we believe, a concept not familiar to most workers.

Study has been made of 101 specimens of feces from 32 persons, from which by direct Endo plating from saline suspensions, 2,568 strains of coli-intermediate-aerogenes organisms have been isolated. Of these, 37 specimens, from 15 different subjects, were stored at 37° C. and plated 154 times during and concluding the period of their viability, yielding 821 strains. Duplicates of these 37 specimens and 12 others from 20 subjects were ice box stored and on 256 platings yielded 1,414 strains.

The usual length of life for a saline suspension of feces stored at 37° C. approximates, but is less than, 3 months. A striking exception was No. 16, which survived 289 days. In this case the original fresh specimen did not yield the colon bacillus but gave intermediates and aerogenes entirely. Suspensions kept in the ice box survive longer. For example, No. 2 died out after 558 days, No. 1 survived 599 days, whereas, No. 13 remained viable for group organisms only 227 days. Very complex factors operate in determining the end-point of viability for this group in a saline suspension of feces, and in such a mixture the coli-intermediate-aerogenes activity in determining viability or other factors is only a part of the picture. It is, however, significant that under the conditions of our experiment the increment

* Read before the Laboratory Section of the American Public Health Association at its Sixty-fourth Annual Meeting, Milwaukee, Wis., October 8, 1935.

TABLE I

SUMMARY OF WORK REPORTED

	No.	Different Subjects	Times Examined	Strains Isolated
Fresh specimens	101	32	101	2,568
Storage at 37° C.	37	15	154*	821
Ice box Storage	49	20	256*	1,414

* In "times examined" are included those final platings of a specimen from which no coli-intermediate-aerogenes organisms were recovered. The average number of colonies sampled per plating is therefore not the quotient of the strains isolated by the times examined but a larger figure.

of fecal organisms in cold saline has in exceptional cases not been eliminated bacteriologically in nearly 2 years. That changes do occur in such specimens and the nature thereof will be apparent.

Fecal specimens for study were dealt with as promptly as possible. They were suspended in sterile saline to a heavy turbidity, and platings made on Endo from these suspensions. In most cases large tubes of lactose broth also were seeded from the suspensions and, where direct plating yielded no group growth, plates were streaked from the enrichment tubes. Where such enrichment figured in the results, mention is made of it. The procedure diagrammed has been adopted:

DIAGRAM

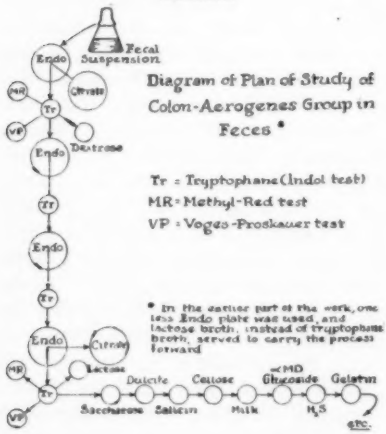

Diagram of Plan of Study of Colon-Aerogenes Group in Feces *

Tr = Tryptophane (Indol test)
MR = Methyl-Red test
VP = Voges-Proskauer test

* In the earlier part of the work, one less Endo plate was used, and lactose broth, instead of tryptophane broth, served to carry the process forward

This procedure, developed along lines suggested by Ruchhoft,[4] provides for adequate purification of strains isolated. It permits comparisons of the reactions of purified and original strains and utilizes the tests now considered most significant for the group. Recognition that lactose deficient organisms may occur in normal feces[5] leads to inclusion in the series of all organisms typical of the group which ferment dextrose. Strains which failed ultimately to ferment lactose were dropped.

The strains isolated, purified, and intensively studied, were examined for their fermentation of dextrose, lactose, saccharose, dulcite, salicin, alpha-methyl-d-glucoside, and cellobiose; for their methyl-red, Voges-Proskauer, citrate utilization, milk and gelatin reactions; and for the production of indol and hydrogen sulphide. Tests for motility and Gram and capsule stains were made as indicated.

For the purpose of this paper 4 reactions only have been utilized in effecting a rough classification of the strains isolated. Following an English custom (Recall "Flaginac reaction" for *B. coli*) we here speak of the "Imvic reaction" by which we refer to indol production (I), the methyl-red reaction (M), the Voges-Proskauer reaction (V), and the utilization of citrate as a sole carbon source (C). The intermediates possess one or more reactions common to *B. coli* (Imvic + + — —) and one or more common to *B. aerogenes* (Imvic — — + +) and some of them are hydrogen sulphide producers. Coli does not liquefy gelatin or pro-

duce hydrogen sulphide.* The aerogenes sub-group does not produce hydrogen sulphide but some forms liquefy gelatin. The intermediates do not liquefy gelatin.

Results obtained relative to the coli-intermediate-aerogenes flora of fresh fecal specimens may first be presented. The predominating group member in fresh feces is the colon bacillus. Of the 101 specimens in our study there were 57, from 18 subjects, from which only colon bacilli were isolated (656 strains intensively studied). Obviously it is impossible by plating to sample completely an entire stool, though it is felt that 5 of these 57 specimens contained only coli—4, 57A, 88, 92, and 95. Of the other 52 specimens yielding only coli on adequate plating there is evidence that other members of the group were present in the stools but in such small numbers as to be missed in sampling. In the remaining 44 specimens considerable variation in group flora was encountered: in some, mixtures of coli and aerogenes were present, in others there were coli, aerogenes, and intermediates. In still others no coli were found but the group was represented by aerogenes and/or intermediates. And there were 4 (Nos. 58, 71, 72, and 86) from which no typical lactose fermenting coli-intermediate-aerogenes could be isolated, even utilizing enrichment methods. One, No. 86, yielded Metacoli (Jordan, 11th ed., 1935), but in the other 3 no group members, even atypical, were present.

Illustrative cases will make clear the degree of variation which may be encountered. Fifty-seven fresh fecal specimens from subject "A" were studied at intervals during 1932–1935 inclusive, and from them 661 strains were isolated and studied. The group flora for this individual was on numerous occasions 100 per cent coli and for 51 specimens 96.3 per cent coli, though specimen No. 45 yielded none of the group even by enrichment. Five days later only hydrogen sulphide producing intermediates (Imvic −−+−+) were recovered (50 strains). This form is rare in fresh feces. Specimen 47 yielded 17 aerogenes and intermediates, and 3 coli strains on direct plating. Two days later No. 48 had to be enriched to yield group organisms, this time coli. After another interval the same situation obtained for No. 49, but enrichment gave aerogenes and intermediates. Specimen No. 50 was negative on direct examination, but on enrichment a sparse growth of coli was obtained. Two days later, and on 6 subsequent occasions, specimens gave good growth on direct Endo plates, and 70 of 72 strains isolated were coli. An additional 161 strains from these examinations, tested only for their utilization of citrate, were all negative (colon sub-group).

The "C.Y." specimen of February 6, 1935, yielded 29 citrate utilizers of 52 strains examined, but his specimen of February 28 was 100 per cent coli—35 colonies fished and studied. The "D.K." sample of March 25, 1935, which gave 80 per cent aerogenes and intermediates was followed by a 100 per cent coli on April 13. "E.B.C." submitted specimens March 5 and 15, 1935, from neither of which any form of the coli-intermediate-aerogenes group

* *Bergey's Manual* (4th ed.) lists 22 species of the genus Escherichia and 7 species of the genus Aerobacter. In their study on intermediates Werkman and Gillen proposed the genus Citrobacter and listed 7 species. In none of the recent work on the coli-aerogenes organisms and their intermediate forms has this detail of classification been followed. The trend is to utilize largely those tests we have designated as the "Imvic reaction." Imvic ++−−, which we call "coli" is more inclusive than the term *Escherichia coli* or *Bacterium coli*, and Imvic −−++ includes more than *Aerobacter aerogenes* or *Bacterium aerogenes*. Our use of "intermediate" likewise connotes a sub-group rather than a species. It should be noted, therefore, we are speaking of sub-groups rather than of specific species when we use the terms "coli," "aerogenes," and "intermediates" as we proceed in our discussion.

could be isolated, even by enrichment, though specimen No. 92, April 23, was entirely coli by direct plating—62 colonies studied. "S." submitted a specimen, No. 86, April 13, from which no typical lactose fermenter could be isolated, but in 5 subsequent specimens, in all except the last, non-lactose fermenting metacoli, more or less predominated. Specimen No. 16, November 5, 1934, from a baby, artificially fed, gave 100 per cent citrate utilizers—no second sample was examined.

To complete the picture, from one subject,[5] 16 specimens, 1932–1933, yielded 156 strains, 91 per cent of which were coli, which in contrast to the usual forms encountered were distinctly and permanently encapsulated.

Results obtained from stored fecal suspensions may next be summarized. For 9 of these there is available a more complete picture than for the others, and our discussion will chiefly concern them, though results obtained with others do not change the general conclusions.

The group flora in fresh feces is in most cases predominatingly or entirely coli. On storage the small percentage of aerogenes originally present greatly increases and the coli disappear. In many cases where aerogenes were not found in fresh feces they shortly appeared in the same specimens after storage. This succession of forms is much more marked in specimens in cold storage than in those at 37° C., and is usually complete in about 2 months. At 37° C., the coli persist longer, relatively to the total life of the specimen but come to be outnumbered and eventually replaced by aerogenes. Almost coincident with the disappearance of typical coli, intermediates appear which increase and persist in cold storage specimens although outlived by lactose degraded gelatin liquefying forms of the aerogenes sub-group. Intermediates occur also but are not prominent at any stage in specimens held at 37° C. This contrast between the intermediate content of 37° C. and ice box specimens may be significant, and is shown in Table II. As noted, the aerogenes become degraded, particularly as regards colony morphology and lactose fermentation, and at the last they are gelatin liquefiers. In early storage stages when

TABLE II

SUMMARY OF STORED FECES DATA WITH SPECIAL REFERENCE TO INTERMEDIATES

	37° C. Storage			*Ice Box Storage*		
No.	*Platings*	*Strains*	*Intermediates*	*Platings*	*Strains*	*Intermediates*
1	19	154	9	39	275	102
2	12	91	6	40	277	54
5	12	108	1	23	146	60
13	6	32	0	4	42	0
14	5	59	0	5	51	12
15	2	32	0	4	29	13
16	10	63	0	1	0*	0
Totals	66	539	18 (3.3%)†	116	820	241 (29.3%)

* Specimen 16 was the only specimen under study in which the ice box storage duplicate died out before the first plating. By contrast the 37° C. portion proved to be the specimen of greatest viability for the entire body temperature storage series.

† Under the conditions of the experiment these percentages must be understood as not conveying mathematical exactness. That is, of 539 strains studied only 18 were intermediates which is 3.3 per cent, but since not every colony on every plate was picked one cannot say 3.3 per cent of all 37° C. organisms were intermediates. There was, however, impartial sampling and the figures have approximate value.

typical coli are disappearing, indol negative coli (Imvic — + — —) and also coli, anaerogenous in all sugars, appear. They produce typical acidity, however. Metacoli have not been encountered in these storage experiments. Practically all forms of the group, including chromogenic strains, which have been reported from soils, grains, waters, and foodstuffs, and not heretofore considered as fecal, are to be found at one stage or another in stored feces. Efforts to break down these anomalous strains as mixtures does not succeed, although the problem of mixed cultures in this field is a most important one.[4]

This succession of forms does not occur in all specimens. Table II does not include specimens 4, 57A, 88, 92, and 95, for which no such succession was noted. No. 4 was unfortunately not put up in duplicate. As an ice box storage specimen it survived 359 days, during which it was 22 times plated, giving 124 strains all typical coli. No. 57A, alive after 437 days, was plated 6 times and 52 colonies were fished—all coli. No 37° C. specimen was prepared for 57A. Specimens 88, 92, and 95 have been studied in both 37° C. and ice box storage and from all at both temperatures and at all platings coli only have been recovered.

These findings lead us to believe that there exist rather commonly (5 of 101) fecal specimens in which the only coli-intermediate-aerogenes group organisms present are coli. The occurrence of such specimens seems to indicate that the change in flora observed in the storage of most fecal specimens is a succession rather than a variation, though it is likely that the presence in stored specimens of lactose degraded organisms represents an imposed variation. Such strains reacquire typical colony morphology and lactose fermentation when repeatedly cultivated or long held in lactose media, and they afford a source of ready material for study of this type of variation.

CONCLUSIONS

We are not disposed to give any figure for the percentages of coli, of intermediates, and of aerogenes in fresh feces, and believe that our findings explain the rather divergent figures found in the literature for the percentage occurrence of these forms. It is felt, however, that the colon bacillus is the group organism par excellence of the healthy human bowel, but its presence in the intestine depends upon a biological balance more delicate than we commonly suppose.

It is probable that in the establishment of the flora of the new-born or in a rebalancing of that flora during life there is a stage during which the group under study is represented by aerogenes and/or intermediates. There may be many more of these fecal flora crises than is realized in which the coli-intermediate-aerogenes group picture is distorted or indeed eliminated.

It is therefore entirely possible for gross intestinal pollution to reach water or a foodstuff in the absence of recoverable coli or any of the coli-intermediate-aerogenes group. This may explain gastrointestinal outbreaks, apparently water-borne, in which the coli index is above reproach. The importance of chemical pollution has been emphasized in these circles in recent drought years, and Jordan and Burrows[6] have pointed out how streptococci cause gastrointestinal symptoms. One may ask whether, in the last analysis, a chemical assay may not be the most reliable index of the true condition of a water.

A protected pollution may show coli-intermediate-aerogenes organisms for a long time and, in rare instances, an old pollution may exist in which the only group representative is typical coli. The presence of typical coli may not

therefore be a guarantee of recent pollution.

It would seem quite impossible in any given case to differentiate coli-intermediate-aerogenes organisms into fecal and non-fecal classes. It is probable that fresh community fecal increment will be characterized by the predominance of colon bacilli and that non-fecal increment from soil and grain washings will predominatingly or exclusively contain aerogenes and/or intermediates. This rule can hardly be applied with safety to any case where suspected pollution may derive from single sources. The absence of the entire group is not proof that fecal pollution has not occurred, nor is this shown by the presence of citrate utilizers to the exclusion of coli. Thus is seen increasing need for thorough processing of water and foods and for the highest possible standards of personal and industrial hygiene.

The occasional occurrence of mucoid coli in fresh feces makes questionable any procedure designed to distinguish between coli and aerogenes by plate colony morphology, and the fact that aerogenes are found in stored feces in all degrees of capsule and lactose fermentation degradation is further evidence that direct colony differentiation is unsound.

The possibility of the presence of lactose degraded forms should be kept in mind in all plating procedures employed to demonstrate Salmonella or even typhoid and dysentery bacilli in fecal or other specimens. Metacoli and degraded aerogenes will pass on 24 hour plates to all but the most expert as members of the paratyphoid or even typhoid-dysentery groups.

The fact that in none of our storage work have metacoli been encountered whereas lactose degraded aerogenes are very common would seem to indicate that the metacoli are fairly stable species with possible pathological significance, or that processes which bring about their production from typical coli are more complex than those of mere storage. On the other hand, the loss of gas production by coli is apparently often effected by storage, and while recovery from this impressed variation may be brought about, it should be noted that it is less easy to accomplish than recovery from degradations imposed on aerogenes.

The marked difference which exists in the degree of presence of intermediates in specimens stored at 37° C. and in duplicates kept in the ice box may have significance in arriving at an understanding of the normal habitat and relationships of the intermediates. Their rarity in fresh feces and their scarcity in specimens held at body temperature when contrasted with their abundance in specimens held in cold storage bespeaks for them an extracorporeal habitat to an even greater degree than is true for the gelatin negative members of the aerogenes subgroup.

Our findings support Clemesha's contention that gelatin liquefying members of the aerogenes sub-group represent the most resistant of the coli-intermediate-aerogenes group.

Changes in the flora such as we report have been recorded in a few instances from pathological conditions. That such changes may occur in the healthy renders it less likely that these flora turn-overs have any etiological significance.

We have been increasingly impressed with the possible close relationship of the so-called Friedländer (Encapsulatus or Klebsiella) group with the coli-intermediate-aerogenes group.

Finally it is felt study should be accorded the mechanism whereby in the healthy human the coli-intermediate-aerogenes group picture is from time to time distorted or even temporarily eliminated. Bacterial antagonisms, bac-

teriophage activity, sub-clinical infections with far-reaching effects on the fecal flora, and changed biochemical conditions of the bowel are among the possible factors to be considered in any approach to the problem.

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Parasites of Animals and the Public Health in North America*

THOMAS W. M. CAMERON, T.D., PH.D., D.SC.
Director, Institute of Parasitology, McGill University, Macdonald College, Research Professor, McGill University, Montreal, Canada

PARASITOLOGY was one of the first branches of medical science to recognize that the human animal suffered from diseases which were not unlike those afflicting other species, and to conclude that such divisions as "human" parasitology, "veterinary" parasitology, and so on, were to a large extent artificial, expensive, and unscientific. Parasitology had good reason to do this because with a few exceptions, the parasites of human beings are shared with both domesticated and wild animals.

Modern parasitology saw its origin in the work of Manson and his disciples in the Old World, and in Theobald Smith and his colleagues in the New. To these two great names must be added a third—that of Osler, who belongs both to the New World and the Old and who was not only one of the greatest pioneers in modern medicine, but was one of the first to recognize the value of coöperation and coördination between human and veterinary medicine. For many years indeed he counted it an honor to teach in the old veterinary school at McGill and he proposed, nearly 30 years ago, that there should be established in Montreal an extensive department of Medical Zoölogy, in which the whole subject of parasitism should be considered. A quarter of a century was to elapse before this department was established. In 1932, however, the National Research Council of Canada, in conjunction with the British Empire Marketing Board, established at Macdonald College, the Institute of Parasitology on the lines laid down by Osler, and it is in the Osler tradition, that we are attempting to carry out our work.

The bond between the two main divisions of parasitology is accordingly already an old and historic one and fortunately, as this branch of science is becoming more appreciated, it is continually becoming closer. This relationship reaches its greatest importance in preventive medicine and public health.

That parasites are important from the viewpoint of public health is a truism which need not be elaborated. One has only to mention hookworm and malaria—which compete with tuberculosis and syphilis for the position of the main enemies of mankind—to realize this. But there are many other parasites which are of great importance, and many of these are parasites of lower animals which only more or less accidentally attack human beings. There are so many of these, however, that it has been necessary to limit this discussion to such as occur in North America, although in these days

* Read before the Laboratory Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 10, 1935.

when distance is reckoned in hours rather than miles, perhaps I may be forgiven if I include the West Indies and Central America in this area.

Parasites are animals which depend on other animals for their livelihood. Every branch of the animal kingdom from the protozoa to the vertebrates possesses members which have taken on a parasitic existence. Among the vertebrates, by far the most interesting to us in America is the vampire bat (*Desmodus rufus*), which is common throughout South America and reaches as far north as Trinidad in the east and Mexico in the west. Not only has this animal become so specialized that it can feed only on mammalian and avian blood, but it conveys at least two serious diseases to its victims. These are trypanosomiasis of horses and paralytic rabies of cattle. The latter is of considerable importance to us, not only because it is the most serious disease of livestock in South America, but because it is transmitted to man in whom it simulates infantile paralysis. The bat is more of a menace as a distributor of rabies than is the rabid dog with which we in northern climates are more familiar. Public health measures can control, with ease, the rabid dog in an intelligent community: we cannot do the same with a mad vampire bat, and our difficulties are increased by the fact that in man and domestic animals the furious stage is almost always suppressed and only the paralytic stage, with its difficulty of diagnosis, is presented. In Trinidad, where I have had the opportunity of studying both the bat and the disease, an extensive investigation by zoölogists, medical men, and veterinarians is in progress and many methods of control are being considered. None so far has, however, been wholly successful.

The other parasites we must consider this afternoon are more inconspicuous and less spectacular but none the less important. Some, like the blood-sucking bat, are external parasites; others live within the body of the host.

The external parasites are all arthropods and include such familiar forms as lice, fleas, ticks, and so on. Lice, of course, are quite specific and the lice of domestic animals will not live on human beings; fleas, however, are less specific. Among the domestic animals only dogs and cats normally have fleas, but these can live quite easily on the human body; these are irritating rather than important. It is quite otherwise with fleas of rodents; not only can they live on human beings, but they can transmit to them a variety of rodent diseases, the most important of which is plague.

Belonging to the same group of ectoparasites are the "ticks." Unlike the lice and fleas they are relatively nonspecific and most of the species which one finds on animals will live with equal facility on human beings. Some species transmit to man a disease of unknown etiology called "tick paralysis." Others transmit diseases which they have acquired in a previous stage on wild or domestic mammals. Of these, the most important are Rocky Mountain spotted fever and tularemia, which occur naturally in wild rodents.

Related to the ticks are the mange mites, of which a large variety are known. Only one, however, *Sarcoptes scabiei* (and its near relation *Notoedres*) is transmissible to human beings. *Sarcoptes* occurs on a great variety of domestic and wild animals and there are numerous cases of man having acquired his infection from them.

Although all the external parasites are arthropods, some of the arthropods have become internal parasites. Of these the most important are the warble flies and their relations. Warble flies

are large, free-living forms, the larvae of which develop underneath the skin of cattle, rodents, and other animals. The cattle species, which are of tremendous economic importance in North America, are occasionally found in man, but not with sufficient frequence to be considered of public health interest. A related species of the West Indies and Central America belonging to the genus *Dermatobia*, is quite frequently found forming "tumors" underneath the skin of residents in those lands. Its normal hosts are cattle and wild animals.

The remaining internal parasites of importance are divided among the parasitic worms and the protozoa.

Among the round worms, the most important form transmissible to man from the lower animals is the trichina worm, with which every public health officer is familiar. This parasite is essentially one of flesh eating animals, both wild and domesticated, but it can be transmitted to practically any species of mammal. Its public health importance lies in the fact that it is frequently transmitted to the domestic pig, and in the form of pork it reaches man. Cooking, of course, destroys it, and it is only when pork is eaten raw, underdone or in a smoked condition, that the parasite is found. While pork is the most common source of human infection, it is not the only one, and there have been a number of sharp epidemics caused by eating the flesh of bear and other wild carnivores. Curiously enough, this parasite appears to be limited in its distribution to the colder parts of the earth. It is quite common in temperate America, and although it is absent from tropical America, it occurs again in the southern part of South America. It is probably very much more common than we generally realize; its differential diagnosis in man is difficult, and the condition is very frequently either not diagnosed at all, or regarded as an enteric fever or rheumatism.

The other round worm of importance in North America is *Ascaris lumbricoides*. It is questionable whether the human Ascaris is ever contracted from any source other than man, although one morphologically identical is common in the pig. However, it is generally believed that the pig form is biologically distinct from the human form.

The other round worms, so far as America is concerned are only of academic interest. The common round worms of dogs, for example, are occasionally recorded from children. The larval stages of one of the dog hookworms has caused some interest in the southern United States, by its ability to penetrate the skin, and there move about for some time, causing a local irritation (generally referred to as a "creeping disease"). This condition, by the way, may be caused by larvae of warble flies as well as by the larvae of various other round worms, none of which is capable of developing to adult life in man.

When we consider the flat worms, we find more of direct public health interest.

Among the tapeworms, there are, of course, the classical examples of *Taenia solium* and *T. saginata*, which can be transmitted to man only through eating raw or under-cooked pork and beef respectively. Both of these worms occur in North America, although their distribution is tending to become localized as meat inspection is becoming more thorough. Their presence in a locality is directly related with the feeding habits of the population, and consequently the racial origins of the local peoples.

Of the two, *T. solium* is much the more important, as its larval stage is capable of developing not only in pigs, but in man himself. When it develops

in human beings it frequently develops in the central nervous system, and a considerable number of mental disorders have been traced to the cyst of this parasite. *T. saginata,* on the other hand, will not develop as a larva in man.

A parasite of animals which has recently caused some interest in North America, is the fish tapeworm, *Diphyllobothrium latum.* This large tapeworm can develop not only in human beings but in dogs and cats and other fish-eating mammals. It is reasonably common in the Great Lakes district, its larval stages being most frequently found in pike and related fish. Cooking, of course, completely destroys the larvae and well cooked fish are quite harmless and—as in the case of most of the parasites transmitted by food—it is only where people have the habit of eating fish in an undercooked or raw condition, that it is common. In the past, this worm has been associated with a form of pernicious anemia in man, but modern work has cast some doubt on any etiological connection with the parasite.

The only other tapeworm of man of any interest in North America is *Hymenolepis nana,* which is common in the southern United States. This species is unique in that no vector is required in its life cycle and it can pass directly from man to man. There is a morphologically identical form found in rats and mice, and there is some evidence to suggest that human infections may come from food which has been contaminated by those rodents. It is undoubtedly true, however, that man may contract this infection from himself.

The tapeworms we have been discussing so far are species which live in man as adult forms. There is one important tapeworm of dogs and other carnivores, which occasionally lives in human beings in its larval stage—this is the hydatid cyst. It is not uncommon in domestic animals in North America and it is particularly common in the lungs of the moose. The hydatid cyst is a slow growing parasite, generally localized in the liver or the lungs. The infection in man is usually contracted in childhood—often 15 or 20 years before the diagnosis is made. The source of the infection was probably a dog—less probably, it may have been a coyote or a wolf—but it was almost certainly not the dog that the patient possessed when the cyst was discovered. We are fairly free from human hydatid here, although it is so common in southern South America that a special society for its study has just been established.

Among the trematodes the most important is a group of skin-penetrating forms which live as adults in wild animals, and which in their larval form attack man while bathing; this causes a condition which is widespread throughout North America called "swimmer's itch" or "cercarial dermatitis." These larval trematodes, although capable of penetrating the human skin and causing a considerable local irritation, cannot develop to maturity in human beings. They are closely related to the well known blood flukes of tropical countries, only one species of which is frequently seen on this continent. This is *Schistosoma mansoni,* which is quite a serious parasite in parts of South America as well as in certain of the West Indian Islands, notably in Porto Rico, Antigua, and St. Kitts. Until recently it was believed to be an exclusively human fluke, but a few years ago I was able to show that it was a natural parasite of the West African monkeys, which are so common in the last of those islands. This parasite does not occur naturally in *continental* North America, and infections seen here are usually contracted in the South. However,

there has been at least one case contracted from tropical snails introduced into the United States and with the modern craze for tropical aquaria, it might be well to avoid the introduction of snails of the genus *Planorbis* from countries where the disease is endemic.

Among the adult trematodes which one occasionally finds here in man, is the lung fluke of mink and muskrats, which is transmitted naturally by cray fish. There is another group of trematodes however, which occur in the liver and intestine of various fish eating mammals and birds, the members of which almost certainly will be found to attack human beings. Many of their relations elsewhere have been found in man and a systematic search for their presence here would probably reveal them also in man. They are carried by a variety of species of freshwater fish and would be expected to occur among people who habitually eat raw or undercooked fish, *i.e.*, the same class of person as is infected with the broad tapeworm.

The last group of internal parasites is the protozoa, and the most important human protozoa are specific to man, at least under natural conditions. A very common ciliate of the pig (*Balantidium coli*) is occasionally found in human beings, causing a severe and occasionally fatal, dysentery. A trypanosome (*T. cruzi*), found naturally in armadillos, opossums, rock cavies and so on, in South and Central America, is transmissible to human beings in whom it causes a quite serious disease. Neither of those parasites is of public health importance in North America, and we may regard the lower animals as playing no important part in transmitting protozoal disease to human beings here.

This brief review of the relationship between "veterinary" and "human" parasitology brings out, I hope, the intimate relationship between them. Some parasites of man are common to him and the lower animals; others require food animals as essential vectors in their passage from one human host to another; still others are accidentally found attacking human beings. Some of these are well known but many are not. This is especially the case with those accidentally found in man. As modern transport almost daily lessens distance, and as travel increases, many exotic forms will be added to this list. Some already have been and the term "tropical" as applied to medicine is fast becoming obsolete. The main difference between tropical medicine and temperate medicine was largely one of degree—the parasites being of paramount importance in the former. That is why, while parasitology is still a young branch of medicine, most of its work has been in connection with tropical diseases. However, this is now changing and a considerable amount of research is taking place into forms indigenous to temperate climates. Yet an enormous amount is still necessary before we can be in a position to control all those parasites which threaten the health of man and beast in this continent. To gain this knowledge, we must adhere closely to the Osler ideal of the closest coöperation between the various branches of medical science.

Monkey Test for Chill-Producing Activity of Concentrated Antipneumococcic Serum*

L. A. BARNES, PH.D., AND ELLIOTT S. ROBINSON, M.D., PH.D., F.A.P.H.A.

Antitoxin and Vaccine Laboratory, Massachusetts Department of Public Health, Boston, Mass.

IN a preliminary report before this Section, in Washington, October 24, 1932, a description was given of the occurrence of chills in *Macacus rhesus* monkeys following the intravenous administration of certain lots of concentrated antipneumococcic serum.[1] That report was based on tests in 12 animals using 3 different lots of serum. The results indicated that sera which would cause chills in an undue proportion of human subjects could be detected by previous testing in monkeys, and gave justification for further study of the method. The present communication is a summary of 3 years' use of the test as a routine procedure.

Technic of Test—It is preferable to use only healthy monkeys which have an initial rectal temperature of 101° to 103° F., and which have been in stock long enough to become accustomed to their environment. A preliminary observation of the animals to be used in the test is advisable, since certain ones may exhibit confusing muscular tremors prior to the injection. The temperature of the animal is recorded, and then a 5.0 c.c. dose of the concentrated serum, warmed to body temperature, is injected intravenously. The monkey is watched closely for about 2 hours for the occurrence of chills or other untoward symptoms. The temperature is taken two or three times during the observation period, at ½ or ¾ hour intervals.

The onset of the chill varies from a few minutes to an hour or more after injection. The longest observed interval was 90 minutes. The reaction is similar to that in humans, and in most typical cases is characterized by marked and continuous muscular trembling which appears to involve the entire body. There are signs of chilly sensations, the animal huddling into a corner of the cage in an obvious effort to conserve body heat. Frequently the affected monkey will appear apprehensive and excitable prior to the chill, but usually becomes subdued as the severity of the reaction progresses.

There seems to be no definite relationship between the chill reaction and fluctuations in body temperature. There is often a subsequent rise in temperature, but severe chills have been ob-

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TABLE I

PROTOCOLS OF A TYPICAL TEST
MAY 22, 1935

Monkey 1081		*Monkey 1082*	
Preliminary observation 10:00–10:35 A.M.		*Preliminary observation 10:15–10:40 A.M.*	
Negative		*Some slight, coarse, muscular tremors*	
10:41 A.M.	Temp. 103.7° F.	10:47 A.M.	Temp. 103.4° F.
10:43	5.0 c.c. serum CP 60 I.V.	10:49	5.0 c.c. serum CP 60 I.V.
11:32	Temp. 102.7° F.	11:34	Temp. 104.6° F.
.....	No chills	11:40	Onset of chill, mild, preceded by restlessness
.....	No chills	11:50	Chill increased, moderate
.....	No chills	12:10	Chill subsided
12:19	Temp. 104.9° F.	12:21	Temp. 105.3° F.
12:26	Observations concluded	12:26	Observations concluded
	Interpretation		
	No chills Temp. rise = 1.2° F.		Moderate chills Temp. rise = 1.9° F.

served in monkeys with essentially no rise, and, conversely, appreciable temperature increases have been noted with no evidence of chills. Occasionally there is a decided drop in temperature without other noticeable symptoms.

In a certain proportion of monkeys injected with serum, the symptoms are somewhat indefinite, that is, there may be occasional spasms of tremors which do not develop into the typical picture of the definite reaction. When a chill-free lot of serum is injected, the monkeys show no abnormal symptoms, although there may be a rise in temperature.

It has not been determined definitely whether reliable information can be obtained by repeated tests upon the same animal. A few experiments of this nature, with varying periods of time between injections, have yielded negative results. One monkey of 175 injected has had an anaphylactic shock which was relieved by epinephrine.

It has been the custom to test each lot of serum in at least 4 monkeys. If 3 of the animals exhibit no chills, the serum is considered safe for clinical use.

Including the cases reported by Barnes and Kramer,[1] 437 patients have received concentrated antipneumococcic serum (9 different lots) which gave no chills in any monkey. Two to 6 monkeys were used in testing each of the 9 lots of such serum. Of the 437 patients, 53 (12.1 per cent) had a reaction characterized by a chill. Sixty-six patients, of whom 12 (18.2 per cent) had a chill reaction, received serum (2 different lots) which gave a doubtful chill reaction in 1 or more of the monkeys tested. One hundred thirty-eight patients have been injected with serum (6 different lots) which gave a definite chill in at least 1 of the test monkeys, and 35 (25.4 per cent) of these patients suffered a chill reaction.

These figures indicate a 50 per cent reduction in the incidence of chills in patients when serum is selected on the basis of monkey tests. Further analysis suggests that this figure is a minimum, for there are included in the last group of 138 patients 34 who were injected with serum CP 43. This lot was tried on 10 monkeys and gave definite chills in only 2, doubtful chills in 4, and no chills in 4. Of the 34 patients injected with it, only 1 had a chill. If we exclude these patients from the group of 138, the figures for those receiving serum definitely chill producing in monkeys become 104 pa-

TABLE II

CHILL REACTIONS IN PATIENTS TREATED WITH SERUM WHICH IN MONKEYS PRODUCED

No Chills			*Doubtful Chills*			*Definite Chills*		
Serum Lot No.	*Total Patients*	*Patients Having Chill*	*Serum Lot No.*	*Total Patients*	*Patients Having Chill*	*Serum Lot No.*	*Total Patients*	*Patients Having Chill*
29	93	10	35	32	2	28	36	7
31	64	6	47	34	10	30	24	16
33	30	4	..	..	..	39	3	2
34	50	6	..	..	..	43	34	1
36	23	7	..	..	..	45	2	0
38	53	5	..	..	..	50	39	9
44	101	13	..	..	..	..	..	..
48	12	2	..	..	..	..	..	..
53	11	0	..	..	..	..	..	..
Totals	437	53		66	12		138	35
Per cent of Patients Having Chill		12.1			18.2			25.4

tients, of whom 34 (32.7 per cent) reacted with a chill.

Another indication that the use of this monkey test has reduced the reactions in patients is that chills have not occurred until the 3rd, 4th, or 5th dose of tested serum, whereas in the earlier years of this study when the monkey test was not used, the reactions were more common after the 1st or 2nd dose of serum. This change is not easily evaluated because of some changes in the dosage schedule and because of the greater familiarity of physicians with this method of serum treatment. Another indication of improvement is that reports of severe or alarming chills have practically ceased.

These figures on chills in patients are taken from the case reports obtained from physicians treating patients for pneumonia in their homes or in hospitals. All reactions characterized by a chill have been counted, although some do not conform to our ideas of a typical chill reaction.

SUMMARY

1. The method described by Barnes and Kramer [1] for determining the chill-producing activity of concentrated antipneumococcic serum on monkeys has been studied further and slightly modified.

2. The results indicate that the method is a useful one for the selection of sera for human use.

3. The incidence of chills in patients undergoing serum therapy for pneumonia is reduced at least 50 per cent by the application of this test.

REFERENCE

1. Barnes, L. A., and Kramer, S. D. A test for reaction-producing substances in concentrated antipneumococcic serum. Preliminary report. *A.J.P.H.*, 23, 6:616–619 (June), 1933.

Precision in the Choice of Health Education Methods*

WILLIAM P. SHEPARD, M.D., F.A.P.H.A., AND ADELHEID ARFSTEN
Welfare Division, Pacific Coast Head Office, Metropolitan Life Insurance Company, San Francisco, Calif.

THIS paper deals with health education of the public as it is practised, whether dignified by the sponsorship of an official bureau of health education, or carried on by the health officer, a member of an official staff, or the voluntary health worker. It must be borne in mind that much health education of the public is done without benefit of expert guidance.

Much has been accomplished by what we have called health education of the public in the past 50 years. Our methods have improved. We have given careful study to content. We have played an important part in reducing mortality in the past half century. We have apparently made some impression on the nation's habits as to diet, seeking adequate medical care, and dental hygiene, and many other things. Most important, perhaps, we have developed a variety of methods. There are, nevertheless, certain shortcomings in our present methods, which show signs of persisting despite new and helpful developments in related fields. We can no longer afford to ignore these.

Lack of Precision—There is evidently a lack of precision in our choice of methods.

We have frequently failed to distinguish between health education and propaganda. Propaganda is a recognized and valuable educational method. It has a technic of its own. It is justified in some instances and harmful in others. It is designed to avoid argument and to appeal to the emotions, to play upon group reactions and to hide the propagandist as much as possible. When used in our work, it should be done scientifically and deliberately.[1]

Some methods may result in repelling certain groups whom we try to educate. Even the play "Yellow Jack" was repulsive to some because it dealt with morbid subjects. "Men in White" was no more interesting to some than a setting in a strange and odorous factory. Reference [2] has been made before to the negative effect of street car signs and billboards about a subject which does not concern a large majority. They only annoy those not concerned. We often use consent slips freely in connection with tuberculin testing and immunization, giving little thought to the possible effect they may have on the skeptical, the ignorant, and the opposed. Request for signed endorsement of a new and strange proposition is not only poor education but is likely to produce a negative reaction in many. A certain amount of repulsion may be unavoidable with many methods, but its amount and direction deserve our careful attention.

* Read before the Public Health Education Section of the American Public Health Association at the Sixty-fourth Annual Meeting in Milwaukee, Wis., October 9, 1935.

Repetition of Old Mistakes—There is a tendency for us to repeat old mistakes which have proved costly in the past.

The fear motive is still used, especially when a new organization enters the field of public education or when a new and urgent situation is encountered. It has been increasingly apparent in safety education recently. Whether it is justified is a matter of conjecture, but if used it should be with a full appreciation of its dangers.

Compulsion is still used unthinkingly by some health departments despite the fact that it rarely educates and may often produce unnecessary opposition.

Belligerency, particularly against the cults, is still apparent in some localities. Those who have dealt most successfully with the disbelievers in the past have usually concluded that deliberate attack is to be avoided except on major issues. To attack such a group is to give them a new lease on life, adding new members to their rolls and giving them a rejuvenated cause to fight for. Antivivisection will die of inertia if we can avoid active opposition and continue a calm, truthful, undisturbed dissemination of the facts concerning the values of the scientific method and of animal experimentation. Certainly, belligerency is not a favored implement in education.

Empiricism—Perhaps the outstanding fault in our present methods is empiricism. This exists to a degree little befitting those in scientific pursuits. We are inclined to render armchair decisions on cause and remedy, which result only in an expression of what we think the public thinks about health.

Shotgun methods in health education, like shotgun prescriptions, are evidence of this empiricism. We are inclined to start a campaign of health education with blare of radio trumpet and burst of printed bomb, giving little heed to where the fragments may fly. When it is over, we know little about the relative effectiveness of different methods. If we stopped to analyze, we might find that the public health nurse preaching the gospel of health where she goes has had more effect on the success of our campaign than our bombs and trumpets.

Not only do we fail to distinguish between health education and propaganda, but we confuse health education with health information. It is possible to inform almost anyone under proper circumstances, but the manner in which this information is used depends upon education. Health information plays an important part in the education of intelligent people, but unfortunately it tends to be our cure-all, another evidence of empiricism. We proceed to inform and think we educate.

There is a serious fallacy in this reasoning. It presupposes man's conduct to be regulated always by his reason. This is a delusion on our part little short of "wish-thinking." Seven years ago Prof. Franklin Fearing[3] stated to this Section:

> It is one of the most certain conclusions of modern scientific psychology that in the vast majority of our actions, there is little in the way of preparation that may be included under such terms as reasoning, judging, or thinking. A publicity program based exclusively on the assumption of rational motivation in human actions cannot be expected in the long run to yield satisfactory results.

Lack of Standardization—Perhaps because our field is relatively new, there is a notable lack of standardization. For some years this Section has been engaged in discussing methods and receiving testimony concerning the relative values thereof. Has the time not arrived when we can begin to formulate a list of methods which may be used in a more or less specific manner to meet comparable situations through-

out the country? In the face of a given situation, shall we print, orate, entertain, nurse, inspect, legislate, or prosecute? Having chosen one or more of these methods, what kind of printing, orating, entertaining, etc., shall we do?

POSSIBLE REMEDIES

Newer developments in the fields of education and psychology, together with our own past experience, would indicate at least three possible remedies for these shortcomings.

A Study of Attitudes—What we are primarily concerned with is motivation—how to obtain the desired conduct in health matters. Motivation arises from a number of psychological factors, among them attitudes, habits, instincts, emotions, wish to excel, and many others. Many of these are too little understood to be subject to measurement. Attitudes, however, which have an important influence on motivation, can now be detected, examined, and measured.

In 1925, Allport [4] suggested a means of measuring opinions in a given group. This was amplified and developed into a method of measuring attitudes by Thurstone in 1928 [5] and 1929.[6] His work was called to the attention of this Section in 1928.[3]

Thurstone offers a method of considerable promise. The technic of preparing an attitude scale is not difficult, and the application of the scale to a community is simple. The scale is constructed by gathering as wide a range as possible of varying opinions concerning a single controversial subject. These opinions are arranged in order from whole-hearted acceptance at one end of the scale to complete rejection at the other. Various social groups representing a fair cross-section of the community are tested by merely asking the individuals in each group to check the opinion or group of opinions to which they are willing to admit that they agree. In our work, some such question as: Why should we be, or not be, vaccinated against smallpox? will develop not only the extent of antivaccination sentiment in the community but the reason for opposition.

This would seem a fruitful field for research with a view to constructing a number of attitude scales designed to shed light on such questions as: Why is over 50 per cent of the milk consumed in a given city unpasteurized? Why are the majority of pregnant women still postponing medical consultation until labor begins? Why do some schools obtain only 50 per cent consent for tuberculin tests? Once we know with certainty even some of the reasons for our difficulties, we are then in a position to choose a more appropriate remedy. Furthermore, this is approaching the problem in a proper scientific manner—making a careful examination, reaching a diagnosis, and then selecting a remedy. It is the opposite of empiricism.

To be sure, the method contains some shortcomings. It is not quantitative. It merely indicates that one individual or group is more opposed or unopposed to a given proposition than another individual or group. This is sufficient for our purpose. The argument that attitude and opinion are different and that this merely records opinion is academic and irrelevant. Another shortcoming is that it will only indicate transient and overt opinions or attitudes. One may openly agree to one thing and actually do another. Even this is a comparable error which will carry through all groups, and it is a variable to which we are accustomed. At the very least, it gives us some knowledge of the factors which we now attempt to combat in darkness.

There is a still simpler approach to the study of attitudes by the use of means at hand. Most health organizations have several agents in the field,

notably the public health nurse. These people are on the firing line. They are in daily contact with the attitudes and health conduct of the people whom we wish to reach. Their advice and critical comment concerning any proposed educational procedure are invaluable. The professional health educator as well as the health officer will do well to consult his field agents concerning procedures and technics in health education. For example, it was a simple matter [2] for us, by the use of Metropolitan Life Insurance Company field men, to learn, at least roughly, the reasons why some 2,000 western families had failed to have their children protected against diphtheria. Crude and inaccurate as many of these answers were, they were classified roughly into 5 groups, with the result that our views were modified and our program benefitted. Whereas we had the impression that active opposition accounted for a majority of the failures to immunize, it was found that it accounted for only 22 per cent, while lethargy and ignorance accounted for 71 per cent.

Inventory and Selection of Methods —Once we begin to understand the actual fundamental attitudes toward health with which we are dealing, we need next a careful up-to-date inventory of the methods at our disposal.

For instance, our study may show that the chief cause of our difficulty is indifference. The remedy, then, might consist of dramatizing the radio message, relying upon repetition and effective slogans, using the subtler methods of propaganda, employing the systematic incidental method whereby any item of current interest in the community is, if possible, related to the subject at hand.

We may find that the chief difficulty is economic, people believing for instance that they cannot afford vaccination. In this case, a program designed to overcome indifference would merely add to unrest. Coöperation by local physicians, provision of free treatment for those unable to pay, and dissemination of information concerning the economy of vaccination versus the cost of smallpox, might be indicated.

It may develop that the chief opposition is due to religious beliefs. It may then seem wise to construct a health education program which will avoid the danger of proposing an action contrary to the teachings of the church. Agnosticism is not a desirable symbol to have associated with a health department, especially if done inadvertently. It may be important to avoid belligerency. It may seem wise to obtain the published endorsement of as many religious leaders as possible, thus isolating the opposed group and taking advantage of the principle of the herd instinct.

The problem may turn out to be socio-psychological. How often a health officer says that nothing can be done in his community regarding a certain urgent matter because his people are "peculiar." There can be no doubt that such group peculiarities exist. Lindeman [7] cites several examples of community prejudice and discusses their influence on the mental hygiene of the individual. Among his illustrations is the community schism produced by two or more warring factions. Group insecurity here leads to demoralization of the normal democratic community processes. Another example which we frequently encounter is the undermining of community self-reliance by the charitable indulgences of a single philanthropist who provides from his own pocket everything he thinks the community needs. The newly organized, full-time health department will often face socio-psychological problems arising from the need for new community concepts of health department purpose

and function. These are very real situations which call for careful examination and diagnosis by the health educator. Such prejudices become part of the family mores of the community with all of their persistence and unassailableness.

A descriptive and comprehensive list of the several health education methods available, with suggestions on their appropriate use, seems an urgent necessity.

Evaluation of Health Education Methods—Finally, there is great need for evaluation of methods which will meet the requirements of differing situations. The advantage of Thurstone's method of measuring attitudes is that the same or a similar scale can be used at the close of the campaign to measure the actual progress made. This is at least an approach to the precision which we lack. It is a method with tangible results which we cannot afford to overlook. Let us not be satisfied with mere impressions, but let us find out and report to each other the relative values of our various procedures.

CONCLUSION

It has been pointed out that while much has been accomplished through health education of the public, there are at least 4 apparent and persistent faults in our present methods: lack of precision, repetition of old mistakes, empiricism, and lack of standardization. There are at least 3 remedies for these faults which give promise and which should be tried—a study of attitudes, an inventory of methods followed by a precise selection, and an evaluation of methods based upon carefully observed experience. One cannot escape the conclusion that there is an enlarging and important field for this Section in which to experiment, standardize, compile, and report to each other on our results.

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Regulations Governing Allotments and Payments to States from Funds Appropriated Under the Provisions of Section 601, Social Security Act, for the Fiscal Year 1936

THESE official regulations have been received from Surgeon-General Hugh S. Cumming.

I. *Allotments*

Allotments will be made to the states * on the basis of (1) population, (2) special health problems, (3) financial needs, as provided in the Social Security Act of August 14, 1935, as follows:

A. Population—Allotments will be made to the several states on a per capita basis, amounting to 57½ per cent of the total sum available for the fiscal year 1936.

B. Special health problems—Allotments will be made to the several states on the basis of special health problems, including training of personnel, amounting to 22½ per cent of the total sum available for the fiscal year 1936.

C. Financial needs — Allotments will be made to the several states on the basis of financial need amounting to 20 per cent of the total sum available for the fiscal year 1936.

II. *Submission of Plans and Budgets*

1. To be eligible to receive from allotments each state shall present a comprehensive statement of the present organization program and budget for state health work within the state, together with a proposed plan for strengthening or improving the administrative functions of the state department of health and for administration of local health service. The Public Health Service will issue a memorandum as to standards of organization and qualifications of personnel recommended by the Conference of State and Territorial Health Officers.

2. Before payments shall be made to any state, the state health officer shall submit to the Public Health Service a proposed budget for each project, showing the distribution of funds from all sources and the items required from the Public Health Service for the period ending June 30, 1936. (Budget forms will be supplied by the Public Health Service and instructions will be issued as to details of preparation.)

III. *Payments from Allotments*

In order that the funds allotted to the states may be of the maximum use

* "State" or "states" as used in these regulations include the Territories of Alaska and Hawaii and the District of Columbia.

in assisting states, counties, health districts, and other political subdivisions of the states in establishing and maintaining adequate public health service, payments will be made to states only in accordance with the following provisions:

1. Payments not to replace existing appropriations.
   A. Payments to aid existing state or local projects will be supplemental to funds now being expended, and in no case will serve to replace existing state or local appropriations for the purpose of relieving state or local authorities from expenditures now being made.
2. Payments to states on the basis of population.*
   A. One-half of the amount allotted to each state on the basis of population shall be available for payment when evenly matched (dollar for dollar) by existing appropriations of public funds expended within the state for public health work; the remainder shall be available for payment when evenly matched (dollar for dollar) by new appropriations of public funds for health purposes within the state made since January 1, 1935, or made prior to that date for the specific purpose of matching funds to become available under the provisions of the Social Security Act. However, the Surgeon General may, in his discretion, modify the requirement with respect to new appropriations for matching where states already have provided in the past substantial state appropriations for subsidizing local health work; provided, that credit for existing appropriations not otherwise used for matching shall be allowed only for state appropriations for local health work and not to exceed 50 per cent of that portion of the allotment to be matched by new money.

   With such exceptions as may be made in accordance with the policy set forth in the preceding paragraph, that part of the fund made available for matching by existing appropriations shall decrease at the rate of 10 per cent per annum, on the average, until at the expiration of a 10 year period the entire fund shall have been matched by an increase in appropriations within the state allowed since January 1, 1935. This provision will continue in effect, within the limits of federal funds available, until such time as an average expenditure of $1.00 per capita shall have been reached by local health services within the state, whereupon it shall be permissible to match the entire fund with existing appropriations for state or local health service.

   The funds to which reference has been made in the preceding paragraphs are to help fill the gaps in the basic minimum organization requirements and to provide a well rounded program.
3. Payments on the basis of special health problems.
   A. Special health needs—For this purpose there shall be available for allotment 10 per cent of the total sum available for

* 1930 Census.

allotment to the several states in the fiscal year 1936. In the allotment of these funds the word "needs" shall be interpreted to mean necessity arising out of high morbidity or mortality on a state-wide basis from particular causes, such as malaria, hookworm, bubonic plague, trachoma, typhus fever, special industrial hazards, and similar geographically limited diseases or other conditions that result in inequality of exposure to public health hazards among the states.

Payments from allotments from this fund are to be matched in the same manner as payments from the fund to be allotted on the basis of population.

B. Training of personnel—In order that there may be established promptly a reserve of properly qualified technical personnel with which to strengthen or enlarge staffs of the state and local health services, 12½ per cent of the total sum available for the fiscal year 1936, shall be set aside and employed for payment as follows:

(a) To establish or strengthen suitable training centers.

(b) To pay living stipends, tuition, and traveling expenses of the trainees who may be nominated by the state and territorial health officers, and to continue to carry and further train such personnel; provided, that payment of stipends shall be limited to a period not to exceed one year for any one individual.

The Public Health Service will arrange for the necessary teaching centers and provide through payments to the states the necessary additions to the teaching facilities of such centers. It will also issue a memorandum as to the qualifications of each class of trainees to be nominated by the state authority, and fix the allowances for stipends, travel, and other items of expense to be met from this fund for training personnel.

Payments from this fund will be in accordance with the needs of the several states and will not be required to be matched.

4. Payments on the basis of financial need

A. Flat allotment—Five per cent of the total amount available for allotment to the several states in the fiscal year 1936 shall be made available for payments to the 51 state and territorial health jurisdictions to which the Act applies. The funds thus to be allotted and paid are to assist the state or territorial health departments in providing the leadership and administrative guidance necessary for the effective use of federal aid.

Payments from this fund will not be required to be matched.

B. Equalization fund—In addition to the fund for the foregoing flat allotment there shall be an equalization fund of 15 per cent of the total sum available for allotment to the several states in the fiscal year 1936,

for aiding the states least able to provide funds for health services. Payments from this fund, which shall be expended exclusively for local health services, shall not be required to be matched. The fund available for payment shall be distributed among the states most urgently in need of financial assistance, the need being determined on the basis of the financial ability of the state as expressed indirectly in terms of per capita income.

IV. *Method of Payment to States*

Payments to the states shall be made in such installments and at such times as the Secretary of the Treasury may direct, to the treasurer of the state or other state official authorized by law to receive such funds. All such funds shall be held by the state official to whom paid in a separate fund distinct from other state funds, and shall be expended by him solely for the purpose or purposes specified.

The treasurer of each state or other state official receiving an allotment or installment thereof or other state official charged with the responsibility for administering the expenditure of the funds allotted shall render to the Surgeon General of the Public Health Service such financial reports as he may require, showing obligations, expenditures and balances.

Unobligated balances as of the close of business on June 30 of each year shall be paid to the Treasurer of the United States through the medium of checks or other bankable remittances payable to the Treasurer of the United States and transmitted to the Surgeon General of the Public Health Service by whom the remittances will be deposited in the Treasury of the United States; as to unobligated balances remaining on completion of any project during the federal fiscal year (July 1–June 30) the same procedure shall be followed unless the Surgeon General of the Public Health Service, with the approval of the Secretary of the Treasury, shall have permitted such balances to be used for other projects within the state. Unobligated balances of allotments made on a quarterly or monthly basis will be available for expenditure in succeeding months or quarters except that balances as of June 30 shall not be carried over but shall revert to the Treasurer of the United States.

V. *Reports*

A consolidated quarterly financial statement will be required from each state or territory to which federal funds have been allotted and paid by the Public Health Service. This report, which shall be prepared on forms supplied by the Public Health Service, will show the amount and distribution of federal funds actually expended, together with a statement as to the actual expenditure and distribution of state and local funds, for each quarter. In addition quarterly reports will be required from state and territorial health departments to the Public Health Service for each state and local project undertaken. This report shall be made on forms to be provided by the Public Health Service for the purpose of showing the activities carried on by the unit and presenting a statement of expenditures incurred by the several participating agencies for the quarter.

EDITORIAL SECTION

Expressions of opinion and statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

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SOUTHERN BRANCH MEETING

IT is a great pleasure to tell of the marked success of the meeting of our Southern Branch held in St. Louis, November 19–20, under the presidency of Dr. C. E. Waller. Our efficient secretary, Dr. G. Foard McGinnes, had arranged an unusually good program containing much of scientific interest as well as practical value. It is not too much to say that the Symposium on Poliomyelitis was the great attraction of the program. This session was overcrowded and a larger hall could well have been filled. We will not here go into the discussion, as we intend to give our readers the entire symposium. Suffice it to say that we know of no other place in which such a complete study of the present status of this much feared disease, as well as of the measures taken for its control, can be found. The chief point of interest was, of course, the discussion of the two types of vaccine being used.

On the next day we heard the address of the president, Dr. C. E. Waller, telling us of the part which the Public Health Service is going to play in the administration of the Securities Act. This was largely a condensation of the two excellent papers which he gave at our Milwaukee meeting in October. The rest of the session was given up to subjects directly concerning health officers and their problems, and excited an animated discussion.

The Southern Branch expects to publish all of its papers in one volume but our *Journal* will give the Symposium on Poliomyelitis.

The attendance was excellent—evincing, as pointed out by the secretary, a steadily increasing interest on the part of the health officers and public health workers of our southern states in the work of the Southern Branch, and an appreciation of the advantages of affiliating themselves therewith.

The registration, while good, was not commensurate with the attendance. It must be added that during our sessions there were most interesting section

meetings being held by the Southern Medical Association, in conjunction with whom we have been meeting, and in view of this fact the attendance was doubly gratifying.

The parent association has good reason to be proud of the Southern Branch. It is being guided by men with excellent judgment and executive ability and is a source of great strength to the Association in general.

The hospitality shown by St. Louis, as a city, as well as by the citizens individually, and especially the medical profession, cannot be spoken of too highly. We owe a debt of gratitude to the local committees for the excellent arrangements made, as well as for the general hospitality.

The new Municipal Auditorium is a wonder building; large enough to accommodate a convention of any possible size. It is in close proximity to a number of the leading hotels. With its splendid hotel accommodations and with this new Auditorium, containing an abundance of rooms for section meetings and a very large space for commercial and scientific exhibits, St. Louis is an ideal convention city.

THE HUNDREDTH ANNIVERSARY OF THE CANTON HOSPITAL

THROUGH the courtesy of the very efficient former Superintendent and the present Head of the Department of Internal Medicine, Dr. William W. Cadbury, we regularly receive the Annual Reports of the Canton Hospital of Lingnan University. From the opinion of Chinese who are in a position to speak, as well as of Americans, we can say that the work being done at the hospital is excellent.

The Annual Report for 1934–1935 has just come to hand, and it is of interest to note that this is the 100th year for this hospital. To the Chinese this apparently does not mean great age and they have largely missed the opportunity, which would be made the most of in this country, of exploiting the 100th anniversary of their institution.

The report of the Superintendent opens with the following quotation from the Duke of Sussex, in 1841:

"If the healing art is to be introduced into China, who can better do it than the nations of the West? When it is once established, it is not likely that it will be lost again; and thus the blessings, each so valuable, will be multiplied and extended, through coming time, whilst the most important ones at which we aim will pass onward during the endless future."

The centenary brings them a new building, which was formally opened on November 2 of this year in connection with the celebration of the founding of the hospital.

A most encouraging report is that the National Government has donated $250,000 toward the construction of the Sun Yat Sen Medical College, and work on it is now going on. The rest of the Annual Report is along the lines usually followed. We congratulate the university on the good work it is doing and on its progress, and also offer our heartiest good wishes to the Canton Hospital in beginning its second 100 years of useful work.

THE SOCIAL SECURITY ACT

THE Association has already placed in the hands of the health officers of the country the address of C. E. Waller, M.D., Assistant Surgeon-General of our Public Health Service, given at our Milwaukee meeting on the workings of the Social Security Act and its administration by the Public Health Service, upon whom this duty falls. This was the first official pronouncement that we know of. It calls special attention to the fact, which does not appear to have been realized in general, that future appropriations of funds under this Act are permissive rather than obligatory. If our health officials do not prepare adequate plans, and do not expend the funds placed in their hands wisely and economically, there is good reason to fear that future appropriations will be curtailed or omitted. We therefore urge all health officers who have received the *Journal* in which this address was published—November, 1935 *—as well as those who have received the reprints, to study this paper carefully, as the fundamental facts there discussed are vital to the success of the Act and its administration.

In our present issue, page 59, we are publishing in full the regulations issued by Surgeon-General Hugh S. Cumming, of the Public Health Service, under the provisions of Section 601 of the Social Security Act. We again beg our readers to study carefully these regulations. It will be noted, under heading II, No. 1, that the Surgeon-General will issue another memorandum on the standards of organization and qualifications of personnel as recommended by the Conference of State and Territorial Health Officers. The Act itself required consultation with this body of Health Officers, and the Public Health Service has accepted their recommendations. As soon as this memorandum is issued, we again urge the health officers to study it.

As has already been pointed out elsewhere, it is of the utmost importance that the health officers throughout the country look to the qualifications of their personnel and make careful plans for the expenditure of the allotments which are expected to be made to them under the Social Security Act.

The American Public Health Association is naturally deeply interested in the success of this Act and will at all times be glad to consult with health officers, state, city, and county.

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* Waller, C. E. The Social Security Act in Its Relation to Public Health. *A.J.P.H.*, Nov., 1935, p. 1186.

PUBLIC HEALTH EDUCATION*

"A Matter of Life and Death"—This is the title of a pamphlet issued in the current money raising campaign of the United Hospital Fund, 370 Lexington Ave., New York, N. Y.

To keep down fund-raising expenses, the committee has illustrated this booklet with still pictures from the motion picture, "Men in White," supplied through the courtesy of Metro-Goldwyn-Mayer Pictures.

The text opens as follows:

A common pin.
A speck of dust.
A gust of warm air.
A rusty knife.
An eight-course dinner.

Commonplaces all, meaningless by themselves. But given certain other circumstances . . .

Then follows a readable paragraph bringing out the responsibility of each of the above items for an urgent demand for equipment or services available through a hospital.

The outside of the envelope carried the lines quoted above.

Proper Use of Commercial Material—A job which might be undertaken by the Public Health Education Section is the study of the use of commercial material in health education.

A committee on the proper use of commercial material by home economics educators reported some months ago to the American Home Economics Association. This committee is working along two main lines:

The formation of a clearly defined policy as to how commercial advertising materials can be used most effectively in all phases of the home economics program.

The preparation of material which (1) will assist teachers, extension workers, and supervisors in recognizing both problems and possibilities in the use of commercial material and (2) will guide them in evaluation and use of these materials.

Both school and adult health education call for similar work on the printed and other material offered from commercial sources.

A New "Baby Book"—From the Illinois Department of Public Health comes "Our Babies: how to keep them well and happy." Copies will be mailed to the parents of all babies whose births "are reported with reasonable promptness." "Sample copies free to health officers."

Pages nearly letter-size, large type, plenty of white space, numerous subheads, detailed index, and a striking cover.

Especially interesting was the method of production. The Lay Educational Committee of the Illinois State Medical Society provided the manuscript which was prepared by members of the Chicago Pediatric Society.

"The Debate on State Medicine"—Says *Journal of American Medical Assn.* (Oct. 19, 1935):

This year the extension divisions and departments of speech of a considerable number of universities and colleges as well as the debating associations of the high schools and similar institutions in many states have chosen as their topic "Resolved, That the several states should enact legislation providing for a system of complete medical service available to all citizens at public expense." Since the announcement of this subject, the headquarters office of many state

* Please address questions, samples of printed matter, criticism of anything which appears herein, etc., to Evart G. Routzahn, 130 East 22d St., New York, N. Y.

medical associations have been almost overwhelmed with requests for material, particularly on the negative side of this subject. The Bureau of Medical Economics of the American Medical Association has prepared a large number of pamphlets, which are available without cost to those who require them in these discussions. A tremendous number of these pamphlets have already been sent to many parts of the United States. In addition, debaters' handbooks have been prepared by several organizations, presumably with a view to presenting both sides of the subject adequately and thus being useful to the debaters on both the affirmative and negative sides. The headquarters office and the officials of the American Medical Association have coöperated with those preparing these handbooks, making available for the debators the point of view of organized medicine.

The editorial continues with a critical review of some of the source material which is offered from non-medical sources.

Certain free publications, and others ranging in price from *5 cents* to *75 cents* are obtainable from American Medical Assn., 535 N. Dearborn St., Chicago, Ill.

Sound Film on Tuberculosis—"Contacts," is a sound film on tuberculosis produced by Hennepin County Tuberculosis Assn., 404 South 8th St., Minneapolis, Minn. Production was directed by Robert Kissack, Director of the Visual Education Department, University of Minnesota, formerly production manager of the University Film Foundation at Harvard.

Dr. Malcolm MacLean who, as the physician, had the leading rôle, is the Director of the General College at the University of Minnesota. Other parts are played by members of the University Theatre.

When the picture opens, a 3 year old child is seriously ill. The X-ray shows her to have miliary tuberculosis. It is too late to save her life, but the doctor immediately goes into action to locate the source of the infection which caused the tragedy. All of the members of the family are examined and tuberculin tested. One by one they are checked off as their reactions to the test are negative or indicate an early case of tuberculosis that could not have transmitted the disease to the child.

Suspense increases as the search takes on the dramatic aspects of a mystery. Finally, the X-ray of an aunt, a young stenographer who was one of the baby's "contacts," reveals open tuberculosis. The story continues with her progress as a patient in a sanatorium.

The film emphasizes through its moving human story, the fact that tuberculosis is not inherited, that it may hide behind a mask of good health, that early cases of tuberculosis can be located only through the use of the tuberculin test and the X-ray, that every case of tuberculosis comes from another and that the disease is spread among "contacts." The finale of the picture presents in rapid panorama, modern weapons in tuberculosis control.

Do Your Newspapers Coöperate?—What one newspaper has done is reported under this heading in *Social Hygiene News*, American Social Hygiene Assn., 50 W. 50th St., New York, N. Y. Oct., 1935.

While some editors still believe their readers will be offended if social hygiene information is published in their columns, the majority of newspapers nowadays print such items freely and use accurate and scientific medical terms. Among the association's large collection of clippings showing such coöperation the series of news stories and editorials which have appeared during the last year in the Evanston (Ill.) *News-Index* regarding the efforts of the Evanston Social Hygiene Committee to retain municipal support for a much needed social hygiene clinic, are worthy of attention both as a live recital of current events and as a guide for other social hygiene agencies who seek to enlist public interest. Whether or not Evanston finally succeeds in keeping its clinic doors open, every man and woman who reads the *News-Index* knows considerably more about the dangers of syphilis and gonorrhea than previously, and is consequently more on the alert to avoid infection from these diseases and to seek treatment if infection occurs.

Mrs. Rosalie Hill Cauley, chairman of the Evanston Committee, and Curtis Mac-

Dougall, editor of the *News-Index* surely did a fine job of team-work. The A.S.H.A. Publications Service has mounted these and other clippings in scrap-book form for loan reference to a limited extent to interested agencies and social hygiene publicity workers. We shall be glad to receive additions to this collection.

Food for Health Project—In the fall of 1934 a group of 134 members of the Boston Y.W.C.A. were enlisted in a 4 month's project which combined health examination and food instruction.

Six phases of the work stood out definitely as lines along which to proceed: correcting faulty diet; compensating through food for special abnormal conditions—overweight, underweight, constipation, etc.; teaching good habits of hygiene in order that prescribed diet should be effective; showing how money can be spent wisely for balanced diet; replacing modern "ads" with scientific information, and, finally and most important, educating the girls to become active in carrying out our dietitians' recommendations.

There were various indications of "the need for more widespread and intensive education in proper hygiene." This need was indicated in one

. . . large group of cases in which improper habits were not so much the result of lack of information as the effect of widespread misinformation. Ignorance in relation to constipation demonstrates this very clearly. Although 8 girls actually complained of constipation, the nutrition examinations showed that in reality 34 were using laxatives regularly. Knowing nothing of the anatomy and physiology of the intestinal tract, they had no clear conception of what constitutes normal habits and were completely unaware of the harmful effects of artificial stimulation and irregular habits.

Need for information was further demonstrated by an alarming tendency to adopt all food fads regardless of whether or not they had any scientific basis. Dangerous variations from a once normal diet were the rule rather than the exception. It was therefore extremely interesting to see the eagerness with which the Y.W.C.A. members welcomed scientifically accurate information concerning the composition of the body and the foods that it needs for normal structure and optimum functioning. It was also gratifying to note that many of the others had no complaints but came for examination to determine the adequacy of their usual food habits and the best procedure to follow to maintain their present state of good health.

After mentioning the "food constituents which comprise the protective diet" the author says:

Because certain of these foods, particularly the milk, the whole grains, and, to a lesser extent, the fruits and vegetables, were lacking, the diet of the average Y.W.C.A. member examined was markedly inadequate. The fact that this was due to lack of income in only a very small percentage of the cases was startling evidence of the imperative need for widespread education.

For the full report, with suggestions for carrying on a similar project, see "Watch Your Weight!" *Womans Press*, National Board, Y.W.C.A., 600 Lexington Ave., New York, N. Y. Dec., 1935. *20 cents.*

The January, 1936, issue of the magazine will specialize on health education and recreation.

Health Education in New York State—As in the past, health education is given generous space in the annual report of the New York State Department of Health. In the report of the State Commissioner of Health it is said that

There is need for a great increase in the health education work of the department to bring about the public understanding necessary for any health accomplishment.

Nearly a page is given to the "Extension Course for Health Officers" which is intended primarily to qualify physicians as local health officers.

The Division of Maternity, Infancy and Child Hygiene reports on "Educational Program at Cannery Camp," the work of a nurse at migrant camps; a poster contest conducted by State Charities Aid Association; family health conferences conducted in 68 communities; exhibits, fairs, films; litera-

ture, for which there has been increased demand; and May Day which was widely celebrated.

The Division of Public Health Nursing presents its professional educational program, which included the leadership classes conducted in three centers for nurses who wished to learn more about group teaching.

The Division of Sanitation has a 12 paragraph section on its educational activities.

Eight pages are devoted to the Division of Public Health Education: Radio Health Plays; Bureau of Visual Health Instruction, including the production and use of motion pictures and exhibits; the Bureau of Printing, which printed new pamphlets, and reprinted others; the handling of the many letters asking for advice; and the disposal of more than 22,000 newspaper clippings.

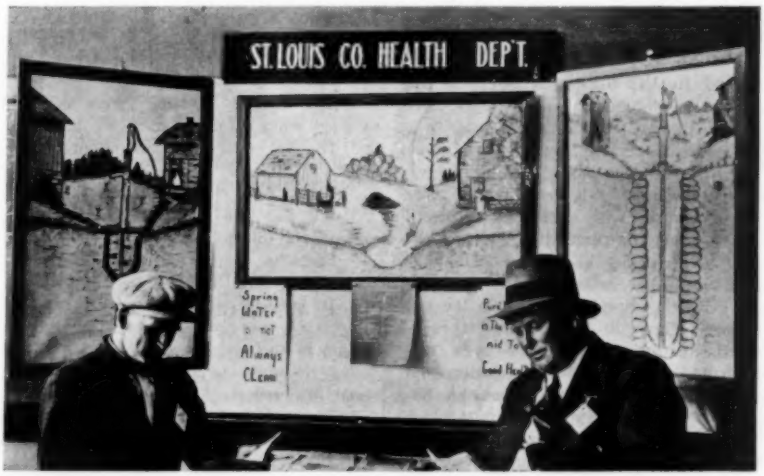
Of the 632 newspapers in the state, 267, or 42 per cent, publish material sent to them by the department during the year. Most of those which did not use the releases were small rural papers which are made up largely of local items and "boiler plate" supplied by syndicates.

One Idea at a Time—The St. Louis County, Minn., Health Department has the big idea that to get a lot of people to understand one idea well is better than to give the same people a little about each of several ideas. Without generalizing too broadly it may be urged that many fair and exposition exhibits of health agencies would be more effective if the displays and the explaining could be concentrated.

Dr. C. A. Scherer, county health officer, says:

> This year we preceded our display with a series of 6 newspaper articles in 22 daily and weekly papers, published in the county. Sufficient copies were made to be able to hand them out to interested people at the fairs. Also much literature along these lines was obtained from all available sources.
>
> The display itself consisted of electrically operated figures to attract attention. Then there were 3 posters on water supplies. We gave them a blue print of a good well after showing what can be wrong with improper wells.
>
> I feel that it is more satisfactory to carry a specific idea than to try to get the entire subject into one contact. Next year we will have a model privy and well, and the

POSTERS OF ST. LOUIS CO., MINN.



intention is to show this well actually spouting water.

The series of articles on farm home sanitation covered the barn and the barnyard, milk and the milk house, rodents and insect pests, the farm water supply, and the privy. One might suggest that it might have been better to have stuck to the one idea at a time in the newspaper articles. Doubtless Dr. Scherer will supply a set upon request.

Professional Training—At a meeting of National Committee of Health Council Executives, at Milwaukee, Dr. John Sundwall submitted a report on "Standards for Training of Health Council Executives."

As approved, the report included the following:

(under General Professional Training) Principles and Practices of Public Health Education and Publicity: Adult or popular health education—lectures, posters, pictures, movies, press, demonstration, and so on. Principles and practices of school health education.

Specific Professional Training: . . . Public relations—procedures for maintaining intimate contact with the public, with the various health and social agencies in the community, and with the organized health-medical professions.

Building on Twenty Years—How we avoided what might have been is suggested in the annual report of the East Orange, N. J., Health Department, in the popular health instruction section:

Much stress has recently been laid, by those in closest touch with the public health movement, upon the cumulative effect of the general and specific knowledge of public health which has been incorporated into the very lives of the American people in the last 2 decades. These 20 years represent practically the entire range of the mass distribution of public health information and advice, and there can be no question but that the favorable health situation which has persisted during the years of depression is due largely to the fact that people have learned how to care for themselves and that facilities for preventive health work have been set up and to a great extent maintained even through this trying period.

Los Angeles Reports on Health Education—One of the more elaborate mimeographed annual reports is issued by the Los Angeles County Health Department. Letter size pages, 188 of them, with a blue paper cover, and a table of contents. There is a chapter on Division of Health Education and Nutrition of Bureau of Maternal and Child Hygiene, and another on Division of Education and Popular Health Instruction of Bureau of General Administration.

In the latter section attention is given to newspaper education, radio, talks and lectures, motion pictures, pamphlets and exhibits. Of special interest are the sections on dramatized broadcasts and the employment of a trained speaker to cover many of the talking engagements. Three pages explain what SERA project for Popular Health Instruction produced in the way of posters, models, wood construction, etc.

Rules for Speakers in Indiana—The Bureau of Publicity of the Indiana State Medical Society has adopted the following "rules for speakers addressing lay audiences":

1. The use of scientific terms should be avoided when speaking to a lay audience.
2. Do not talk over 30 minutes, unless urged to do so.
3. Please keep closely to your subject.
4. Put pep into your talk and speak loud enough for all to hear.
5. Speakers should arrive at least a few moments before the hour announced.
6. It is suggested that speakers endeavor to present the composite view of the profession in their addresses to the public.
7. It is advisable to avoid citation of personal case reports.
8. Please aid the Bureau of Publicity in its efforts to make all presentation of its work as impersonal as possible.

Health Education in New York City—What is being done in a group of health center districts, serving a part of the city's population as reported in *Neighborhood Health*, issued by Department of Health:

The numerous activities of the health education program in the health center districts during the first 10 months of the year included more than 1,500 conferences, lectures, and meetings, and the distribution of about 600,000 leaflets on various health subjects.

The meetings reached professional groups as well as the lay public. Series of talks on tuberculosis for social, health, and welfare workers, teachers, etc., were arranged in coöperation with local tuberculosis associations and other agencies, in most of the organized districts. These were followed at some of the department's tuberculosis clinics by monthly get-togethers of patients and their families. At these, a staff physician would speak briefly and answer questions of patients, which could not be adequately dealt with at clinic sessions. A large number of patients attend these meetings—in one center the average attendance was 90.

Talks for the laity have also been given on this subject at health centers, at social agencies, churches, schools, young people's gatherings, etc.

Round table conferences on tuberculosis problems for small groups of professional workers are being held at some of the clinics. Many difficulties are cleared up in these informal, frank discussions between staff physicians, nurses, and others.

Syphilis has received particular emphasis in the work of the centers. Congenital syphilis was stressed early in the year at meetings of physicians, midwives, and social workers. This fall a series of 3 conferences on syphilis has been held in 5 districts, and will be arranged for the other districts later. Professional groups taxed health center facilities to capacity at these meetings. The large number of questions asked evidenced the keen interest of those present in this subject. At the final conference of each series the agencies were urged to arrange meetings for their own workers and clients, thereby helping to create an intelligent attitude on this problem. Intensive activities will be continued throughout next year.

Cancer and diabetes were also stressed and hearty coöperation was given to the educational programs of the two agencies active in these fields. More intensive work in diabetes education is planned for the near future.

Nutrition workers at the centers have been instructing mothers attending health center conferences how to choose foods adequate to maintain health at a minimum cost.

In several areas diphtheria surveys were made by house-to-house canvassers as a work relief project. In addition to the usual efforts in the field of diphtheria prevention, intensive work is being carried on in districts shown by the survey to be most in need of it.

Generous assistance was received from the Medical Advisory and General Advisory Committees of the centers. Members of these committees, who are all keenly interested in bettering local health conditions, have actively supported the health center programs and helped to awaken the interest of the community in them. These programs vary in the different districts, emphasis being placed on the prevention of those diseases most prevalent in the area.

The department has prepared special leaflets on syphilis and diabetes for lay groups, and has assisted other health agencies in the distribution of material on cancer and heart diseases, among others. Local agencies, as well as physicians, have also been kept informed of health center activities through conferences, personal calls, circular letters and the bulletin, *Neighborhood Health*.

When Attitudes Change—Under the title, "Why Does the Average Man Change His Attitudes?" a paper was presented before the Public Health Education Section at Milwaukee by Maud E. Watson, Ph.D., Director of the Children's Center, Children's Fund of Michigan, Detroit.

Much of the paper was devoted to the "basis of these attitudes originally."

This discussion of background led to the conclusion: "the need of the individual to understand himself, his frustrations, strivings, and satisfactions." This will be possible through widespread understanding in mental hygiene.

The finest way to teach mental hygiene is by giving parents this understanding before they become parents—by selecting carefully men and women before they enter into various professions, and knowing the

.fundamental reasons for their selections. In not a very distant day, mental hygiene will have a greater place in a medical training course, the nurses', teachers', and law students' curricula. We can only hope that when this time comes it will be done by the highest trained, emotionally mature, experienced mental hygienists who have learned to face the realities of adult life with all its changing economic and social standards, and ever increasing complexities of human relationships.

Education and professional training are important only as this becomes part of their objective, for life demands of everyone that sooner or later, to be at peace within himself and not overburdened by his conflicts to the extent that he has little energy left to work, that he understand his own emotional needs and mechanisms as well as those about him. Attitudes will change with such an awareness and insight more quickly than by any other process.

Institute for Tuberculosis Workers—Feb. 3 to Feb. 15 an institute for the training of tuberculosis workers will be held by the National Tuberculosis Association at New York University, Dr. Philip P. Jacobs, in charge.

One or two additional institutes may be held elsewhere if there is sufficient demand for them.

Health Education in Journal, November, 1935—Of course we, as all other professional groups, will read "Public Health at the Cross-roads," by President Bishop (pages 1175–1180).

Health education is not mentioned in "Economic Health and Public Health Objectives," by Roche (pages 1181–1185), and "The Social Security Act in Its Relation to Public Health," by Waller (pages 1186–1193), but widespread, effective health education largely depends on what the Act does for personnel and administration of state and local departments. One of the proposed considerations in the allocation of funds is that

> . . . a satisfactory local health service is a well organized health department . . . supported by suitable laws and ordinances, by *favorable public opinion*. . . . (The italics are ours.)

Important seems to be a phrase in "Nutrition and Child Health," by Schwartz (page 1195):

> It is high time that we begin examining children and distributing information with a conscious realization of individual variations. Equally important as individualized physical examination is the need for individualized instructions by child welfare workers.

See "Part the School Nurse Plays in the School Health Education Program," by Rood (pages 1215–1220); see especially pages 1217–1218).

In "Mental Hygiene in the Provincial Health Service," by Fleming, see particularly pages 1208–1209.

Don't fail to re-read "The General Reader," by Robinson (page 1225).

"Need for Health Instruction in Cleanliness," by Rowell and Tobey.

In "The Open Forum," by Atwater, see under "White Elephants" (pages 1257–1258), for a project calling for planning and promotion; and under "Public Health and Race Progress" find an editorial from the *New York Times*, which some of us will wish to copy and send to our local editorial writers. Why not send to the *Journal* other good editorials on public health?

In "Books and Reports," under a review of "Making Our Minds Behave," by Komora, see:

> It is a paradox that the more successful of our popular books on psychology should be so thin and unsubstantial, and the solid and more valuable material of mental hygiene, educationally speaking, so poorly prepared for popular consumption, when it is available at all.

Under "The Sedgwick Memorial Medal" (page 1275) see quotation from Matthew Arnold.

Journal of the Outdoor Life Is No More—With the December, 1935, issue the *Journal* which was founded

in 1910 at Saranac Lake, was discontinued.

In "The Editor Looks Back" the magazine from 1910 to 1920 was reviewed for what is suggested as to the development and progress of the tuberculosis movement. *15 cents.*

Hygeia for December, 1935—Published by A.M.A., 535 N. Dearborn St., Chicago, Ill., this issue contains:

Cosmetics (a problem of the budget) . . . On adopting a baby (rules) . . . What toys should Santa bring? . . . Do your sinuses trouble you? . . . Health hints for travelers (first of a series) . . . The puzzle of the little serpents (another mystery solved) . . . What you should know about cancer . . . First aid to the unconscious (reproduction of A.M.A. dramatic broadcast) . . . Budgeting the reserve strength of the heart . . . Home nursing in communicable diseases . . . Elie Metchnikoff (a pioneer scientist) . . . Crossing one's bridges (of the teeth) . . . Masked "hyperthyroidism" or thyrotoxicosis . . . Surgical treatment of chronic arthritis . . . Curious stories about health . . . King Smog (one-act play on the smoke evil) . . . Bacteria in hard times . . . New books on health . . . Questions and answers.

Under "School and Health":

How successful am I as a teacher? . . . Health teaching in December . . . Christmas sweets and good health . . . A safe and happy Christmas (safety) . . . New health books for teachers and pupils.

ANNUAL REPORTS

Audrey M. Hayden sends the latest report of the Illinois Society for the Prevention of Blindness, 203 N. Wabash Ave., Chicago, Ill. This is a narrative report, read at the annual meeting and distributed to directors of the society. With sub-heads and other fixings it will be prepared for general circulation. It is an example of how facts and statistics may be made interesting to a meeting audience.

"Health of Hinsdale County" is the title of the 34–35 annual report of Hinsdale County Health Department, Michigan, probably located in the town of Hinsdale. There are both a contents and an index. The chapter on "Education" has the following subheadings:

Medical and dental postgraduate courses. Meetings. Examinations and remedial service. Teachers postgraduate summer school. Extension courses. Teachers encampment and study groups. School directors' conference. Custodians course. Parent and community education. Staff education.

DATE AHEAD

Jan. 25, 26 or 27: "Child Labor Day." Plans and helps supplied by National Child Labor Committee, 419 4th Ave., New York, N. Y.

FOR EDUCATION OR REFERENCE

"Colds—Influenza—Pneumonia." Includes 12 ways in which colds, influenza and pneumonia may be prevented. Metropolitan Life Insurance Co., 1 Madison Ave., New York, N. Y.

"Tuberculosis Among Negroes in the South." A 2 page statement of diagnostic difficulties, preventive and therapeutic measures, etc. *Tuberculosis Abstracts.* Jan., 1936. Obtain from a state tuberculosis association.

"Your Friend the Health Officer," by W. G. Smillie, M.D. Life Conservation Service of John Hancock Mutual Life Insurance Co., Boston, Mass. 11 pages and cover. *Free.* To help build understanding of what is or what should be characteristic of the good health department.

"Bibliography on Public Health and Allied Subjects." The annual reading list made up of books issued not earlier than 1930. American Public Health Association. *Free.*

Classified lists of reprints and pamphlets issued by Milbank Memorial Fund, 40 Wall St., New York, N. Y., will be sent upon request. The classifications include: China, Health and the depression, Health education, Medical economics, New York health

demonstrations, Physical impairments of adult life, Population problems, Public health nursing, Tuberculosis, Venereal diseases, and Ventilation.

Community Fund of St. Paul, Community Welfare Fund of Lansing, Mich., Los Angeles Community Chest, and The New Orleans Chest have used excellent statements of health needs and activities in collection and campaign printed or mimeographed material.

"Check List of Red Cross Publication." *Red Cross Courier,* Washington, D. C. Dec., 1935. First aid and life-saving, public health nursing and home hygiene, etc.

For news of the housing movement and references to books, pamphlets, and articles, see *News,* Housing Section, Welfare Council, 122 East 22d St., New York, N. Y. Copy free. *$1.00* a year.

"Handbook on the Federal Child Labor Amendment." National Child Labor Committee, 419 4th Ave., New York, N. Y. 62 pages. *15 cents.* Plenty of material for one who wishes to write or speak on the subject.

"The Physician's Handbook," Connecticut State Department of Health, Hartford. In two parts: "by physicians," and "for physicians," with a separate list of special forms for physicians. A page describes available educational material, speakers, etc. Other details which seem to make this a decidedly useful publication.

"Relation of the Social Security Act to Present-Day Problems of Childhood," by Katherine F. Lenroot. Reprint supplied by Children's Bureau, Washington, D. C.

"What You Should Know about Social Hygiene" is a 72 page pamphlet prepared by American Social Hygiene Assn. for Brotherhood of Locomotive Firemen and Enginemen. Many copies were distributed at the Milwaukee convention. Comment on the pamphlet is requested by the Brotherhood, 418 Keith Building, Cleveland, Ohio. The Brotherhood is to be congratulated, both for the original publication of the articles in their magazine, and the further publication in pamphlet form.

MAGAZINE ARTICLES

"Figuring for Health." "Dr. Frederick L. Hoffman: He counts the gains and losses in war against disease." *Literary Digest,* 354 Fourth Ave., New York. Nov. 23, 1935. *10 cents.*

"Good Eating," by R. C. Moore. "Diet rules that will put a glow in your skin, a sparkle . . ." *Collier's,* 250 Park Ave., New York. Aug. 24, 1935. *5 cents.*

"The Right to Die." Discussion of "mercy killings." *Literary Digest,* 354 Fourth Ave., New York. Nov. 23, 1935. *10 cents.*

"They Walk in Danger to Conquer Disease." "Public Health Service heroes in never-ending war; risk lives in fighting plagues; stricken often, they go on, if they recover, to new battles against insidious foes." *Literary Digest,* 354 Fourth Ave., New York. Nov. 9, 1935. *10 cents.*

"We Expect It of Doctors," by G. J. Spreull. Service at the call of need. *Rotarian,* 35 E. Wacker Drive, Chicago. Dec., 1935. *15 cents.*

"Who Should Pay the Doctor?" 1. The Group, says William Trufant Foster. 2. The Patient, says Morris Fishbein, M.D. *Rotarian,* 35 E. Wacker Drive, Chicago. Nov., 1935. *15 cents.*

"Your Feet on the Ground," by R. M. Carson. "Hiking is cheap and easy if you know how to go about it." *Collier's,* 250 Park Ave., New York. Oct. 19, 1935. *5 cents.*

BOOKS AND REPORTS

Tropical Medicine—*By Sir Leonard Rogers, M.D., and Sir Oliver W. D. Megaw, 2nd ed. London: J. & A. Churchill, Ltd.*, 1935. 535 pp. Price, $5.00.

Students of tropical medicine will welcome this new edition of a book which was everywhere favorably received when it appeared in 1930. Since that time a number of advances have been made in the field of tropical medicine. Our knowledge has increased especially in regard to the typhus group of fevers, yellow fever, the nutritional diseases, leprosy, and malaria. Material has been added on all of these subjects.

When the first edition appeared the authors felt that their views on beri beri and pellagra were not entirely orthodox, but in the preface of the 2nd edition they point out that the situation has changed and they are in the happy position of being able to adduce authoritative evidence to support the stand then taken. In regard to etiology of both of these diseases they feel obliged to adopt an agnostic attitude, but they point out that there is no difficulty in recommending safe and reliable measures for their practical management. This was the position taken by the Public Health Service of this country following the studies of Goldberger, who is quoted by the authors.

While all the chapters are excellent, we call attention to the one on Climate as a Disease Factor, written by the junior author, which discusses this much misunderstood subject succinctly and clearly. As in the former edition, each chapter is signed by the writer.

There is no question that the 2nd edition will meet with as favorable reception as did the first. There are two colored plates and 82 figures. The printing and make-up of the book are excellent. MAZÝCK P. RAVENEL

1000 Questions and Answers on Tuberculosis—*By Fred H. Heise, M.D., Editor. New York: Journal of the Outdoor Life*, 1935. 232 pp. Price, $.75.

This little volume is packed with information. It is not a catechism as the title might indicate, but is authoritative, attractive reading of primary interest to the tuberculous individual, and helpful for nurses and doctors generally, and for the tuberculosis worker particularly.

These questions represent accurately the things which bother the mind of the average intelligent tuberculosis patient, and the correct answers are given in simple, concise, non-technical language. There are many inquiries about the patient's own physical condition, the significance of certain symptoms and signs, questions about the diagnosis, treatment, and complications. Everything pertaining to tuberculosis and its management is covered, and every question is answered completely and satisfactorily.

The author inspires the reader with confidence that the things he says are so and the advice he gives is the best to follow.

The arrangement of the book into 16 main groupings or sections is good. The reader has no difficulty in finding questions concerning any particular phase of tuberculosis. Each section is complete and full enough. For instance, climate is discussed in a little more than 2 pages, and this section is a gem so far as advice about climate

goes. The clear-cut, sensible answers cover the subject thoroughly and convincingly.

Tuberculosis workers will probably wish there were a few more questions regarding prevention. The enthusiast for certain methods of treatment or care may think that too little emphasis has been placed on this or that. But the patient honestly seeking real information in language which he can understand, and doctors and nurses generally, as well as welfare and tuberculosis workers especially, will find much in this little book that is new, refreshing and helpful.

R. L. CARLTON

On the State of the Public Health. Annual Report of the Chief Medical Officer of the Ministry of Health for the Year 1934. *London: His Majesty's Stationery Office,* 1935. Price, 3s. net.

This report is unfortunately late in appearing, but any document from the Ministry of Health of England is always welcome, and we have repeatedly expressed our appreciation of these annual reports. This one is in some ways of more than usual interest, since it is the first made by Dr. Arthur MacNalty, who succeeded Sir George Newman on April 1. We wish it were possible to mention all of the many good features.

In general, the health of England has been good. With the exception of outbreaks of diphtheria and scarlet fever there have been no epidemics. Each year since the World War and the depression, malnutrition has been discussed. The present report is more favorable than one might expect:

> The general death rate, the infant mortality rate, the death rates from bronchitis and pneumonia, the case-mortality rate from scarlet fever and diphtheria, do not indicate unfavourable effects of present economic conditions. The general mortality rate from measles is high, but this is an epidemiological feature of long standing in this area.

Taking tuberculosis as an index, there is no sign of serious and progressive decline in the public health. The physical condition of adult men is fairly maintained, but there is some increase of neurotic conditions. In the areas under special study

> . . . there is little evidence of any increase of disease and none of increased mortality.

For several years the English have been making a special study of diphtheria, and have classified the organism causing these outbreaks into "gravis" and "mitis" strains. Anderson, Happold, McLeod and Thomson believe that by the use of their tellurite chocolate medium they can quickly and surely distinguish between these two strains. The "gravis" strain is resistant to antitoxin. An improvement in the control of diphtheria has been found in the examination of swabs from the nasopharynx in obscure toxic conditions in children. West's swabs of small size must be used.

The report takes an optimistic view of the venereal disease situation, which does not appear to the reviewer to be borne out by the figures. As far as first cases are concerned, there is a slight diminution in syphilis, but the total cases do not give much cause for rejoicing. Gonorrhea has slightly increased. The total number of attendances at the treatment centers was 3,407,000, the highest on record, but is favorable as showing recognition of the importance of venereal diseases by the public, and treatment by responsible specialists.

Tuberculosis of cattle still engages attention. The situation in England is bad, and the human infection from bovine sources does not show great improvement. The "Attested Herd" scheme has been adopted, and is giving good results. It is pointed out that "the primary object of the Milk (Special Designations) Order is not the eradication of tuberculosis from the

herds, but the prevention of infection of the milk with bovine tubercle bacilli." . . . "Cambridge synthetic tuberculin" has been tried to a considerable extent and has been found equal in value to the "old tuberculin." In fact, it seems to be of especial use in the interpretation of "border-line reactions."

The study of foods is given considerable attention. The dependence of England on supplies from far foreign countries makes this of unusual importance to the country.

Much attention is paid to the humane slaughtering of animals. It has been proved that the flesh of sheep and hogs is not injured by prior stunning, and 850 local authorities have extended this method to the slaughter of sheep. The use of electricity for this purpose is increasing rapidly.

The report proper closes with a well deserved tribute to Sir George Newman, who retired on March 31, 1935. He was the first Chief Medical Officer of the Board of Education, as well as of the Ministry of Health, having served from 1907 in the first capacity, and 1919 in the second. On his retirement, His Majesty the King bestowed on him the Grand Cross of the Order of the British Empire. His reports were classics, but the present one by his successor bids fair to equal them, though we miss the summary which Sir George gave.

There are the usual appendices made up largely of statistical data. This report is always a liberal education in preventive medicine and public health.

MAZYCK P. RAVENEL

Modern Home Medical Adviser: Your Health and How to Preserve It—*Edited by Morris Fishbein, M.D., Garden City, N. Y.: Doubleday, Doran,* 1935. Price, $9.50. 854 pp.

According to the preface, this book is planned to tell what every intelligent person should know about scientific medicine and hygiene, and also to be a guide to hygiene and first aid. There are sections on the skin, eye, ear, nose and throat, as well as on diet, posture, mental hygiene, care of the feet, old age, etc. There are 180 pages devoted to hygiene of women, sex hygiene, prenatal and postnatal care, and the feeding of infants and children. There is not much said about the details of treatment of disease, but there is some danger that the advice given will be used instead of sending for a physician.

One of the good features of the book is that the services of physicians are recommended always, and one of the best chapters is on The Choice of a Physician, in which specialists and family doctors are discussed.

Here and there we find evidences of careless writing, which might be expected when a man attempts to write on too many subjects. Under hydrophobia, we are told that the virus of hydrophobia in the cord of rabbits "has been attenuated by passage through many animals. . . ." The fact is that the "virus fixe" is of very much greater virulence than street virus, made so by passage. This is certainly true for some of the lower animals, and probably true for man also. It is a loose statement which should not be given to the public. Further, it is incorrect to speak of injecting "with the disease."

Among the 24 contributors to the book are many well known men, and some of the articles are notably good. In the old horse-and-buggy-mud-road days, such books were conceded to be not only useful, but necessary, while with good roads, automobiles and hospitals, things have changed. The editor of the volume says: "It is in a way a modern substitute for the old-time family medicine book." The reviewer is still doubtful of the value of a book

of this sort. This may be old fashioned, and some of the names found among the collaborators are evidence that this opinion is not shared by everyone. If the necessity of such a book is conceded, we can recommend this as being exceptionally good. It contains a great deal of well presented useful information and is free from many of the objections to which works of this general class are open.

The make-up and printing are excellent. There are 4 colored plates showing the arrangement of the organs in the body. Many other illustrations in black and white are good. A good index adds to the value of the book.

MAZŸCK P. RAVENEL

The Subnormal Mind—*By Cyril Burt, M.A., D.Sc. (Oxon.) New York: Oxford University Press,* 1935. 368 pp. Price, $3.75.

It is difficult to confine oneself to a brief or cursory review of this thought-provoking volume. It really demands detailed and critical treatment of each chapter with much more space than can be devoted to it here. The volume consists of the carefully prepared series of lectures given by Dr. Burt under the terms of Charles Heath Clark's bequest to the University of London. It is only fair to state that Dr. Burt has parted company with the materialistic, behavioristic school of psychology, so much in vogue in this country, and is in the congenial company of William McDougall and his followers.

The first chapter properly deals with the Normal Mind. "Between the normal and the subnormal," writes Dr. Burt, "there is no sharp line of cleavage. Hence it is hardly possible to understand the various forms of mental subnormality without knowing something of the normal mind." One is reminded of Mark Twain's facetious statement that "all of us are more or less sane." The author believes that "psychology in the past has been far too intellectualistic . . . the ultimate bases of character prove to be emotional rather than intellectual, unconscious rather than conscious."

The chapters following deal with the mentally deficient, the dull or backward, the delinquent, the neurotic, asthenic and sthenic neuroses, and with ascertainment and incidence of mental states. Dr. Burt insists that the "entire question of intellectual subnormality must be considered as a whole. We are beginning to recognize that from the earliest days of infancy, mental influences count for quite as much as physical." The chapter on the delinquent is especially helpful and is written with clarity and insight.

An appendix contains Tests of Educational Attainments, a Scale of Intelligence-Tests, and a most instructive Questionnaire on Neurotic Symptoms. This volume gives one a comprehensive view of the various phases of mental abnormality, constantly relating them to the normal mind. It can be recommended without reservation to those who desire a balanced up-to-date treatment of modern problems relating to social and individual maladjustments.

RICHARD A. BOLT

Clinical Parasitology and Tropical Medicine—*By Damaso de Rivas, B.Sc. Biol., M.S., M.D., Ph.D., in collaboration with Carlos T. de Rivas, B.A., M.D., Philadelphia: Lea and Febiger,* 1935. 367 pp. 144 engravings. 1 colored plate. Price, $5.00.

This textbook, the authors state, is written for students and practitioners in response to the demand for a treatise upon modern progress in tropical and parasitic diseases. It is divided into 6 parts and 17 chapters. Part I deals with a general consideration of the etiology, pathology, environmental con-

ditions, clinical and laboratory diagnosis, and treatment and prognosis of parasitic and tropical diseases. The other parts deal in sequence with diseases caused by protozoa, metazoa, and bacteria; diseases of undetermined etiology; and climatic diseases and animal poisons. The more important diseases are dealt with in considerable detail and most of them with accuracy. The best sections are those dealing with nematodes, bacterial diseases, and climatic diseases and animal poisons. The illustrations are very good except for important omissions, and the printing is excellent.

Chapter 5 particularly contains a description of the authors' use of hot saline by duodenal tube and rectal application for the treatment of most of the intestinal disorders described in the book. This method has not received the attention it deserves in the treatment of some stubborn intestinal disorders, but its application is advised to a rather exaggerated extent in some conditions, such as 40 to 50 treatments for removal of the flagellates, *Giardia* and *Trichomonas*.

It is rather unfortunate that a textbook advocated for the use of students and practitioners contains a number of questionable theories and factual errors. For instance, the authors consider *Endamoeba coli* as potentially pathogenic. They consider that the pigment produced by the malaria parasite is more responsible than the parasite itself for what they call the "malaria tragedy." They state that the quotidian type of fever in malaria is due to the bite of 2 or 3 mosquitoes on separate days, ignoring the well established fact that the bite of one mosquito frequently produces quotidian fever in the natural course of the development of malaria. They are inclined to believe that the febrile reaction in malaria is due to "temporary mechanical irritation or stimulation of the merozoites on entering the new erythrocytes." They state that it is not clear whether the yellow discoloration of the skin following the use of atabrine is due to the dye or to a toxic disturbance of the liver function. They state that the etiological agent of rat bite fever is a leptospira, "a long spirochete similar to *L. ichterohaemorrhagica*." They believe that hookworm infection occurs mainly through the mouth rather than through the skin and that this is also true of infection with the schistosomes. They state that the cercariae of the schistosomes encyst on water plants, whereas it is well established that they do not encyst but enter the mammalian host mainly by penetration of the skin. They intimate that the pellagra preventive factor is the same as the antineuritic factor, and state that "there are no definite prophylactic measures against the disease (pellagra)."

Errors in spelling are found in the first editions of most books, but in this book they are numerous and often repeated. Errors in the spelling of scientific and personal names, are unfortunate since they confuse the student. A few examples are "monoxeous" for "monoxenous," "diosulphate" for "thiosulphate," "T a e n i d a e" for "Taeniidae," "myasis" for "myiasis," "Mizayima" for "Miyajima."

Although the book is not intended as an exhaustive treatise, certain omissions detract greatly from its value. There are no descriptions or illustrations of the intestinal amebae other than *E. histolytica* and *E. coli;* there is no mention of carbarsone or vioform in the treatment of amoebiasis; no mention of the organic antimony preparations for the treatment of leishmaniasis; no mention of the many recent advances in our knowledge of yellow fever; no mention of the occurrence of Rocky Mountain spotted fever in the eastern and southern parts of the United States. In a book on clinical

parasitology one would expect to find illustrations of the cyst of *Giardia,* the various stages of *Plasmodium malariae* and *P. falciparum,* the unfertilized egg of *Ascaris,* the eggs of *Clonorchis, Schistosoma mansoni, S. japonicum,* and *Fasciolopsis,* all of which are omitted.

Despite these defects, which it is hoped will be remedied in a later edition, the authors are to be commended for their effort to produce a concise textbook on a field of medicine which deserves greater attention in the United States. HENRY E. MELENEY

Textbook of Attendant Nursing—*By Katherine Shepard, R.N., and Charles H. Lawrence, M.D. New York: Macmillan,* 1935. 405 pp. Price, $3.00.

The authors have written this book after 17 years' experience in teaching attendant nurses. They say, in the preface, that it was originally intended for their own use, but that they "have become convinced that there is a definite and increasing demand for women who are properly trained to care for patients who are not seriously ill, and to fill the breach in the household caused by such illness." To meet the needs of this group, they have attempted to give, in one book, "all that they need to know in their daily work, and nothing that they do not need."

The book is divided into 4 sections, the first of which introduces the student to Anatomy and Elementary Physiology and Diseases. The arrangement of the material is very good. The discussion of each system is followed by a description of some of the diseases associated with that system. The chapter on the nervous system and its diseases is followed by a chapter on Mental Disorders. The nursing care of mentally ill patients is given only a half page, which seems very inadequate since much of the work of the attendant nurse is with such patients. This section is concluded with chapters on Microörganisms and Some Communicable Diseases.

Section II deals with Elementary Dietetics, and includes the fundamentals of home housekeeping; classification of foods; food for invalids and child feeding.

Section III covers those nursing procedures for which an attendant nurse may be responsible, including solutions and medications. It would seem impossible for anyone to have adequate knowledge of medication and dosage, apothecaries' measure and the metric system, from such a brief discussion.

In Section IV the authors discuss miscellaneous subjects—Behavior, Private Nursing, Personal Hygiene, Ventilation, and Care of the Well Baby.

An appendix gives an outline of the way the book is used for the 58 weeks' course by the Household Nursing Association in Boston.

In such a book the emphasis necessarily must be placed upon the "how" and not the "why." The material, throughout, is well organized and presented in a clear-cut, logical manner, to meet the needs of the group of attendant nurses who care for chronically ill patients, in the home or in an institution.

The book has a special value in placing the teaching of this group definitely in a school set up for that purpose, rather than making it a by-product of a school of nursing. There might be many differences of opinion as to what functions and responsibilities an attendant may assume, but there would be, no doubt, very general agreement that the teaching of these functions could be done successfully only as it is separated from an organization which maintains a school of nursing. HELEN FADDIS

Infant Mortality in New York City One Hundred Years Ago—*By Charles Bolduan and Louis Weiner.*

From Journal of Pediatrics, Vol. 7, No. 1, p. 55 (July), 1935.

This paper attempts to prove that the infant mortality in New York City at the beginning of the 19th century probably was no higher than at the beginning of the 20th century. A graph is presented showing probable course of infant mortality rate in New York City from 1810 to 1930. This is not altogether convincing. There is no question about the rates from 1900 onward, which show a marked downward trend; but the distribution from a low in 1810 to a high in 1870 is based upon assumptions difficult to reconcile. There is no certainty that the birth and death rates in the earlier period are comparable with those since 1900.

RICHARD A. BOLT

National Public Works. Addendum. Vol. II—*New York: World Peace Foundation, 8 W. 40th St.,* 1935. 256 pp. Price, $2.00.

An inquiry made by the Information Section of the League was addressed to the nations of the world designed to furnish information on public works completed or in progress in various countries since the beginning of 1929. Data were sought on the nature of such undertakings, principal administrative methods followed, methods of financing, the allocation of expenditures to labor and materials, and the effect of these activities upon unemployment.

The works are classified by various categories, those of more or less interest to sanitarians being: provision for drinking water supplies and sewage disposal, land improvement, canals and other inland waterways, and agricultural land reclamation.

Volume I of this report contained the replies of 29 governments. The present publication contains the replies of Australia, Chile, China, Denmark, Egypt, Ethiopia, France, Hungary, India, Irish Free State, Poland, and Sweden. Except for some general statistical data the volume contains little of interest to the public health profession.

J. K. HOSKINS

Mental Health—*By Frank E. Howard, Ph.D., and Frederick L. Patry, M.D. New York: Harper,* 1935. Price, $3.50. 551 pp.

A psychiatrist and a psychologist have collaborated to produce in this book a study of the factors which enter into the development of the healthy mind and the methods which have been most successful in correcting deviations from normal personality and behavior. They address themselves particularly to the student and the professional worker, expressing their conviction that—

> . . . a sound scientific and philosophical point of view and a knowledge of the fundamental conditions for healthful mental development are indispensable in the preparation of these workers. No teacher, psychiatrist, social worker, nurse, or practitioner can become an effective worker in the field of applied mental hygiene until he himself has a hygienic personality gained through putting into practice the principles of psychobiologic hygiene.

The material is presented in a clear and interesting manner and its application is frequently illustrated by carefully selected case history material. Its practical nature may be indicated by the following chapter headings: hygiene of the emotions; sex as related to mental hygiene; the mental hygiene of family relations; the mental hygiene of childhood and youth; and mental hygiene of deviations in child behavior. One hundred and forty pages are devoted to "methods of reconstructing personality and behavior problems," and 27 pages deal with "the methods and work of the visiting teacher." For the most part, the authors have avoided technical discussion, the chief exception being in the 50 pages devoted to the exposi-

tion and interpretation of the psychobiological viewpoint of Dr. Adolf Meyer. The value of this material and the careful manner in which it is handled should more than compensate for any difficulties which may be encountered by the reader in adapting himself to an unfamiliar terminology.

The book as a whole may be characterized as one of the best attempts to give a clear explanation of the scientific basis underlying the principles of mental hygiene and their practical application. Questions for discussion and review and recommendations for further reading given at the end of each chapter increase its value as a textbook, and special attention has been given throughout to the needs of the classroom teacher and others engaged in educational work. FREDERICK W. BROWN

Gynecological and Obstetrical Tuberculosis—*By Edwin M. Jameson, B.S., M.D. Philadelphia: Lea & Febiger,* 1935. 256 pp. Price, $3.50.

The excellence of this volume is evident at first glance. It is compact, comprehensive, and admirably arranged. The material, while much of it is the result of first-hand observation and experience, is closely correlated with the work of distinguished gynecologists and phthisiologists in other countries.

An outstanding value is the gathering together into one volume of information which would otherwise require wide search of existing literature. This is exemplified by the extensive and remarkably complete bibliography which is appended.

The conservative attitude adopted toward surgical treatment and radium therapy is in keeping with the best modern thought, and the discussion of tuberculosis as a complication of pregnancy shows fine balance.

The monograph is a striking addition to the library of both gynecologists and phthisiologists and has no rival as a portal through which to enter more intensive study of the important problems with which it deals.

KENDALL EMERSON

BOOKS RECEIVED

THE BACTERIOLOGY OF TYPHOID, SALMONELLA AND DYSENTERY INFECTIONS AND CARRIER STATES. By Leon C. Havens. New York: Commonwealth, 1935. 158 pp. Price, $1.75.

GIRLS ON CITY STREETS. By Jacob A. Goldberg and Rosamond W. Goldberg. New York: American Social Hygiene Association, 1935. 384 pp. Price, $2.50.

MEDICO-LEGAL JURISPRUDENCE. Edited by Benjamin Werne. New York: Current Legal Thought, 1935. 150 pp. Price, Paper, $1.50; Cloth, $2.00.

A COURSE OF STUDY IN DENTISTRY. Report of the Curriculum Survey Committee. Chicago: American Association of Dental Schools, 1935. 412 pp. Price, Paper, $1.00; Cloth, $1.50.

TOMORROW'S CHILDREN. The Goal of Eugenics. By Ellsworth Huntington. New York: Wiley, 1935. 139 pp. Price, $1.25.

VETERINARY MILITARY HISTORY OF THE UNITED STATES. By Drs. L. A. Merillat and D. M. Campbell. Chicago: Veterinary Magazine Corp., 1935. 1173 pp. Price, 2 Vols., $10.00.

AMERICAN SEWERAGE PRACTICE. Vol. III—Disposal of Sewage, 3d ed. By Leonard Metcalf and Harrison P. Eddy. McGraw-Hill, 1935. 892 pp. Price, $7.00.

HANDBOOK OF BACTERIOLOGY. 4th ed. By Joseph W. Bigger. Baltimore: Wood, 1935. 458 pp. Price, $4.25.

THE SINGLE WOMAN AND HER EMOTIGNAL PROBLEMS. By Laura Hutton. Baltimore: Wood, 1935. 151 pp. Price, $2.00.

NEW PATHWAYS FOR CHILDREN WITH CEREBRAL PALSY. By Gladys Gage Rogers and Leah C. Thomas. New York: Macmillan, 1935. 167 pp. Price, $2.50.

COMPLETE HANDBOOK ON STATE MEDICINE. By J. Weston Walch, Chief Compiler. Portland, Me.: Debaters Information Bureau, 1935. 158 pp. Price, $2.50.

A SELECTED PUBLIC HEALTH BIBLIOGRAPHY WITH ANNOTATIONS

RAYMOND S. PATTERSON, PH.D.

Infant Deaths in Old New York—The reasons for the rise and fall of the infant death rate during the 19th and 20th centuries in New York are discussed. Though infant death rates have been halved since 1910, neonatal deaths have shown little reduction. The two pictures might well constitute a text for endless discussions of infant hygiene.

ANON. Infant Mortality and the Declining Death Rate (City of New York). Quart. Bull. 3, 4:89 (Nov. 1), 1935.

Taking Growth Apart to See What Makes It Tick—Wandering about in the broad field of growth, the author points out several landmarks: growth is controlled by a number of factors; growth and differentiation are mutually inhibitory, but this inhibition may be overcome by removing cells from their environment; cancer is the outstanding example of freedom from restraint. This brief and stimulating paper should be read.

BOYD, W. Growth, Normal and Abnormal. J.A.M.A. 105, 19:1521 (Nov. 9), 1935.

Laboratory Aid in Pneumonia Therapy—Rapid typing of exudates from pneumococcus infection by the Neufeld test is described. Its value in permitting early use of the appropriate immune serum is evident.

BULLOWA, J. G. M., *et al.* The Reliability of Sputum Typing and Its Relation to Serum Therapy. J.A.M.A. 105, 19:1512 (Nov. 9), 1935.

Health and Work—A physical survey of employees and persons seeking work leads to the conclusion that people in good health and who keep themselves as free as possible from physical handicaps are less likely to suffer unemployment than the unfit. That seems a conclusion hard to refute.

DIEHL, H. S. Physical Condition and Unemployment. Pub. Health Rep. 50, 46: 1610 (Nov. 15), 1935.

Preventing Maternal Deaths—Surveying maternal deaths in English speaking countries, this Canadian observer finds that the experience is much the same in all. Puerperal infection is the first cause and every effort must be expended to prevent it. Close correlation of all agencies is imperative.

FRASER, J. R. Maternal Mortality and Morbidity. J.A.M.A. 105, 19:1481 (Nov. 9), 1935.

It's Satisfactory in England, Too—Alum-precipitated toxoid was used successfully in English schools and institutions. The practical necessity of the confirmatory Schick test is questioned.

HAINE, J. E. The Use of Alum-Precipitated Toxoid in Diphtheria Immunization. Brit. M. J. 3905:896 (Nov. 9), 1935.

Epidemiology of Tuberculosis—Three very important papers make up this symposium: only clinics limited to areas which can be covered by visiting nurses can provide the epidemiologic services essential to effective prevention; tuberculosis is spread slowly, largely in family epidemics from one generation to the next; pulmonary tuberculosis of adult type is not the continuation of childhood infection but an exogenous infection acquired in adolescence. No adequate comment on the scope of these papers is possible here.

OPIE, E. L., *et al.* Studies on Tuberculosis, I, II and III. Am. J. Hyg. *22*, 3:539 (Nov.), 1935.

Order of Immunizations in Infancy—Discussing the prophylactic value of pertussis vaccine, the author proposes, for reasons given, that infants be vaccinated against whooping cough first (at 7 to 12 months); 4 months later against diphtheria; then when Schick negative, smallpox vaccination is performed. Scarlet fever immunization may be completed later, before kindergarten.

SAUER, L. Whooping Cough and Its Prevention. New Eng. J. Med. 213, *22*:1061 (Nov. 28), 1935.

Teeth vs. Sugar—Heated discussion in support of the theory that highly refined carbohydrate foods that need no chewing allow plagues to form in retention areas with resultant dental caries. All other theories of tooth decay are vigorously relegated to the scrap heap.

THOMSON, G. The Prevention of Dental Caries. Pub. Health, 49, *2*:58 (Nov.), 1935.

Experimental Observation in Vitamin B—Only the most severe forms of B avitaminosis are usually recognized, but there are plenty of milder cases of vitamin B deficiency that respond to an increase of that factor in the diet. There is evidence that the American dietary is frequently deficient in the antineuritic vitamin.

VORHAUS, M. S., *et al.* Studies on Crystalline Vitamin B. J.A.M.A. 105, 20: 1580 (Nov. 16), 1935.

About Heart Diseases—Scanning the field for preventive measures against heart disease, the author considers the possibilities in such factors as rheumatism, syphilis, hypertension and arteriosclerosis. Succeeding papers in this excellent symposium suggest that the real increase in circulatory diseases is slight and due largely to saving of early deaths from infections. Fewer false diagnoses of heart disease would be made if it were diagnosed in terms of its causative factors.

SPRAGUE, H. B., *et al.* The Etiology of Heart Disease. J.A.M.A. 105, 18:1391 (Nov. 2), 1935.

Industrial Hygiene—Good run-of-the-mill symposium on health services for general industry, for shop women, and for elderly workmen. Nothing new but still worth while.

STOWELL, T. E. A., *et al.* The Medical Service of an Industrial Concern. J. Roy. San. Inst. 46, 5:280 (Nov.), 1935.

ASSOCIATION NEWS

Executive Board Meeting

THE Executive Board was in session in New York on December 19. Those participating in a full day of discussion of Association policies and Association activities included the entire Board and other Association officials as follows:

John A. Ferrell, M.D.
J. N. Baker, M.D.
Walter H. Brown, M.D.
Louis I. Dublin, Ph.D.
John P. Koehler, M.D.
Friend Lee Mickle
Thomas Parran, Jr., M.D.
John L. Rice, M.D.
Huntington Williams, M.D.
Arthur P. Miller, Chairman, Committee on Fellowship and Membership.
C.-E. A. Winslow, Dr.P.H., Chairman, Committee on Administrative Practice
Abel Wolman, Chairman, Committee on Research and Standards
C. C. Young, D.P.H., Chairman, Committee on Meetings and Publications
Wade H. Frost, M.D. (by invitation)
Reginald M. Atwater, M.D., Executive Secretary.

A summary of actions taken follows:

1. The dates of the 65th Annual Meeting of the Association in New Orleans, La., were definitely established as October 19–22.

2. Dr. James M. Batchelor, Superintendent of Public Health of New Orleans, was appointed Chairman of the Local Committee on Arrangements.

3. The Committee on Meetings and Publications was authorized to make such group travel arrangements to the Annual Meeting city as would be most advantageous to the membership and further, to arrange a post-convention tour through Florida to Havana upon the invitation of various official agencies if there is enough interest in the membership to warrant it and if the costs can be kept low enough to make it attractive to members.

4. The Committee on Meetings and Publications was authorized to proceed with the publication of the second volume in the series of public health classics sponsored by Delta Omega and printed and distributed by the American Public Health Association.

5. Vacancies on the Standing Committees of the Association were filled as follows:

Committee on Administrative Practice—A. Grant Fleming, M.D. (1936)
Committee on Professional Education—Henry F. Vaughan, Dr.P.H. (1937)
Committee on Professional Education—Stanley H. Osborn, M.D. (1938)
Committee on Research and Standards—Wade H. Frost, M.D. (1936)

The five new members on the Committee on Fellowship and Membership, with terms expiring in 1937, were approved as follows:

I. Malinde Havey, Public Health Nursing Section
William C. Welling, Vital Statistics Section
Frank J. Osborne, Health Officers Section
Don W. Gudakunst, M.D., Child Hygiene Section
Emery R. Hayhurst, M.D., Industrial Hygiene Section

6. Dr. Wade H. Frost appeared before the Board upon its invitation to express his point of view on general Association policies with special reference to the Standing Committees. His closely reasoned, logical dissertation upon the philosophy of attempted standardization of public health methods and practices was discussed at length. The readers of this *Journal*

will have the opportunity to read his report in full in the February issue.

7. The list of Section Committees presented by the various section secretaries was considered and appointments confirmed.

8. Dr. George W. McCoy was elected Chairman of the Sedgwick Memorial Medal Committee. Dr. Haven Emerson was added to the personnel with term expiring in 1936.

9. Dr. John A. Ferrell, Chairman of the Executive Board, presented his resignation from membership on the Committee on Constitution and By-Laws. Dr. W. S. Rankin was elected to fill his place.

10. Dr. John P. Koehler was elected Chairman of the Association Nominating Committee. Following are the other members of the Committee:

George C. Ruhland, M.D., Health Officers Section

Mary P. Connolly, Public Health Education Section

LeRoy A. Wilkes, M.D., Child Hygiene Section

E. L. Filby, Public Health Engineering Section

Alma C. Haupt, R.N., Public Health Nursing Section

Robert D. Defries, M.D., Epidemiology Section

Robert S. Breed, Ph.D., Laboratory Section

Henry F. Smyth, M.D., Industrial Hygiene Section

Stewart G. Thompson, D.P.H., Vital Statistics Section

Prof. Samuel C. Prescott, Food and Nutrition Section

11. Dr. Thomas Parran, Jr., was appointed to represent the A.P.H.A. as a member of the General Advisory Committee on Maternal and Child Welfare of the U. S. Dept. of Labor.

12. A basic budget of $107,400 was approved for the conduct of the Association activities during 1936.

APPLICANTS FOR MEMBERSHIP

The following individuals have applied for membership in the Association. They have requested affiliation with the sections indicated.

Health Officers Section

Robert W. Adams, M.D., Chetek, Wis., Health Officer

Wilber V. Bradshaw, Jr., M.D., Barbourville, Ky., Director, Knox County Health Dept.

Joseph L. Bryan, M.D., Xenia, Ill., District Health Superintendent

Ralph W. Crane, M.D., 50 Glenbrook Rd., Stamford, Conn., Health Officer

Linwood Farley, M.D., Ashland, Va., Health Officer

Robert T. Hambrick, M.D., Hickory, N. C., Health Officer

Bernard W. Patton, M.D., Lebanon, Tenn., Director, Wilson County Health Dept.

William C. Summer, M.D., Minden, La., Director, Webster Parish Health Unit

William F. Tanner, M.D., P. O. Box 992, Brownsville, Tex., Surgeon, U. S. Public Health Service

M. Lawrence Turner, M.D., 4301 Juanita Ave. S., St. Petersburg, Fla.

Clarence C. Urquhart, M.D., 112 Suffolk St., Ironwood, Mich., City Health Officer

Laboratory Section

Fay V. Mitchell, Water Works Dept., Hickory, N. C., Water and Milk Bacteriologist

Norbeto A. Quinones, M.D., Department of Health, San Juan, P. R., Assistant Director, Biological Laboratory

Andrea Saccone, M.D., 334 E. 116 St., New York, N. Y., Pathologist, Metropolitan and Columbus Hospitals

Sarah B. Whitney, B.S., 36 Capitol Ave., Hartford, Conn., Junior Microbiologist, Bureau of Laboratories, State Dept. of Health

Newell R. Ziegler, M.D., Ph.D., University of Missouri, Columbia, Mo., Teacher of Bacteriology and Preventive Medicine

Vital Statistics Section

Jacob Baar, M.A., 1 Madison Ave., New York, N. Y., Statistical Bureau, Metropolitan Life Insurance Company

Herbert B. French, M.A., Parliament Build-

ings, Victoria, B. C., Canada, Deputy Registrar, Provincial Board of Health

John H. B. Gann, Parliament Buildings, Victoria, B. C., Canada, Statistical Clerk, Provincial Board of Health

John T. Marshall, Parliament Buildings, Victoria, B. C., Canada, Inspector of Vital Statistics, Provincial Board of Health

Anna J. Miller, 3942–45 St., Long Island City, N. Y., Statistician, National Organization for Public Health Nursing

Public Health Engineering Section

Fernando Cort, Isla 31, Burgos, Spain, Sanitary Engineer, Instituto Provincial de Higiene

Burton Lowther, 710 Colorado Building, Denver, Colo., Consulting Hydraulic and Sanitary Engineer

James M. Potter, 1000 Widener Building, Philadelphia, Pa., Service Dept. on Water Purification and Sewage Treatment, Pennsylvania Salt Manufacturing Co.

Industrial Hygiene Section

Allen D. Brandt, Sc.D., Willson Products, Inc., Reading, Pa., Research Worker in Industrial Hygiene Laboratory

Donald E. Cummings, B.S., 9600 S. Winchester Ave., Chicago, Ill., Field Director, Saranac Laboratory for Study of Tuberculosis

Harry L. Johnson, M.D., Hickory, N. C., Medical Director, City Memorial Hospital

Food and Nutrition Section

J. O. Clarke, B.S., 1222 Post Office Building, Chicago, Ill., Chief, Central District, Food and Drug Administration

Donald K. Howe, B.S., 1202 Jones St., Omaha, Nebr., Vice-President, charge of manufacture, Fairmont Creamery Co.

Child Hygiene Section

Andrew D. Abernethy, D.D.S., Hickory, N. C., Lecturer on Dental Health to Parent-Teachers Association

Maud E. Watson, Ph.D., 3743 Brush St., Detroit, Mich., Director of The Children's Center and Child Guidance Division, The Children's Fund of Michigan

Public Health Education Section

Laurie L. Allen, M.D., 432 Empire Bldg., Milwaukee, Wis., formerly member of staff of Muirdale Sanatorium and Milwaukee County Dispensary

Helen D. Denniston, M.D., Lathrop Hall, Madison, Wis., Teacher, Department of Physical Education for Women, University of Wisconsin

Hovhannes Zovickian, M.D., 528 Mt. Auburn St., Watertown, Mass., School Physician

Public Health Nursing Section

Alma E. Foerster, R.N., Court House, Racine, Wis., Charge of Public Health Nursing Service, Racine County Chapter, American Red Cross

Frances L. Harcus, R.N., County Bldg., Everett, Wash., Red Cross County Public Health Nurse

Myona M. Morrison, R.N., Gunnison, Colo., School Nurse

Dorothy L. Northrop, Box 224, Ayer, Mass., Advisory Nurse, Nashoba Associated Boards of Health

Clara B. Rue, R.N., 787 N. Van Buren St., Milwaukee, Wis., Educational Director, Visiting Nurse Association

Epidemiology Section

William T. Clark, M.D., C.P.H., 1941 Hertel Ave., Buffalo, N. Y., Director, Syphilis Control Service, State Dept. of Health

Alexander L. McKay, M.B., D.P.H., Parliament Buildings, Toronto, Ont., Canada, Director, Division of Preventable Diseases, Ontario Dept. of Health

Samuel Weissross, M.D., Pocatello District CCC, Pocatello, Idaho, District Surgeon

Unaffiliated

Maurice Hardgrove, M.D., 208 E. Wisconsin Ave., Milaukee, Wis., Director, Milwaukee Serum Center—Columbia Hospital

NEWS FROM THE FIELD

SAN FRANCISCO POISONINGS

THE Director of Health of San Francisco City and County, J. C. Geiger, M.D., has been good enough to keep this office informed of the status of the unfortunate accidental poisoning which has taken place in that city, due to salvaged sodium bicarbonate which was put out at a sale and which contained a great deal of fluoride of sodium.

Some bags of the material sold contained as high as 92 per cent in the repackaged samples. There were also symptoms of arsenical poisoning, and the origin of the arsenic was a puzzle. It was finally explained by the fact that reactions taking place in the bottles formed hydrofluoric acid which etched the glass, thereby releasing the arsenic often contained in glass pastes. In some samples arsenic was present in as much as 87 p.p.m.

As far as our information goes at present, no criminal motive has been established, but apparently there has been negligence.

It is a matter of congratulation that San Francisco has such a wide-awake Health Director, whose prompt action by radio and other means of publicity has doubtless saved hundreds of people from poisoning. There have been, so far, 21 cases of poisoning with three deaths.

FLORIDA PUBLIC HEALTH ASSOCIATION

ANOTHER milestone has been passed in the history of the Florida Public Health Association, which held its seventh Annual Meeting in Orlando, Fla., December 2–4. A splendid program was prepared and the speakers who were experts in special lines of health work brought unusual messages that were both helpful and interesting. The attendance was very satisfactory: 203 members and guests were registered and 118 attended the banquet on Tuesday evening. At the public meeting on Monday evening a large number attended who were not registered.

The newly elected officers for the ensuing year are as follows:

T. H. D. Griffitts, M.D., President
W. E. Van Landingham, M.D., First Vice-President
Russell Broughman, Second Vice-President
Stewart G. Thompson, D.P.H., Secretary-Treasurer

The Board of Directors is comprised of the above named officers and the following:

Henry Hanson, M.D.
Lena W. Starck
Mrs. Inez Nelson
Fred H. Stutz
W. A. McPhaul, M.D.
George N. MacDonell, M.D.

The impressive list of speakers from outside the state included:

Halbert L. Dunn, M.D., Washington, D. C.
Reginald M. Atwater, M.D., New York, N. Y.
W. W. Bauer, M.D., Chicago, Ill.
W. F. Walker, Dr.P.H., New York, N. Y.
Kendall Emerson, M.D., New York, N. Y.
E. S. Godfrey, Jr., M.D., Albany, N. Y.
J. R. McCord, M.D., Washington, D. C.
I. Malinde Havey, Washington, D. C.
Aurelia B. Potts, R.N., Nashville, Tenn.
James P. Leake, M.D., Washington, D. C.
R. A. Vonderlehr, M.D., Washington, D. C.
E. L. Bishop, M.D., Knoxville, Tenn.
M. V. Ziegler, M.D., Washington, D. C.
Homer N. Calver, New York, N. Y.

NEW YORK STATE HEALTH PROGRAM

THE New York State Works Progress Administration took over today the nursing care and health supervision of nearly 450,000 needy families.

Announcement of the transfer of the

task from TERA supervision to the WPA was made by Dr. H. Jackson Davis, WPA's state consultant on medical care. The work will be under the "professional" supervision of the State Department of Health.

Dr. Davis explained that the "project employs 600 graduate and registered nurses, each of whom was eligible for relief when taken on the project payroll." He said that under the WPA he plans to increase "the nursing personnel by at least 100 graduate registered unemployed nurses." He said some of the major features of the program include:

> The health care of 600,000 children under 16 years of age; bedside nursing of the unemployed sick in almost half a million families; health supervision to prevent sickness, with particular emphasis on infant care and supervision of expectant mothers; advisory work in dieting and correction of malnutrition.

The WPA also announced that 75,625 jobs had been created in the counties outside of New York City, in the drive to put 100,000 to work by Nov. 30. Present WPA employment was divided as follows among various State districts:

Buffalo, 19,826; White Plains, 9,914; Glens Falls, 5,148; Albany, 5,352; Mineola, 8,100; Utica, 6,100; Syracuse, 2,175; Binghamton, 3,430; Rochester, 6,655; Elmira, 3,980; Lockport, 4,945.

At the same time Lester W. Herzog, State WPA Administrator, disclosed an additional list of approved projects totaling $2,243,162.78. This latest allocation brought the total funds made available to date to provide jobs in New York State to $62,861,501.70.—*New York Times*, Nov. 27, 1935.

SIOUX SANATORIUM TO BE AT RAPID CITY

THE Secretary of the Interior has now approved the recommendation of a board of commissioned officers of the U. S. Public Health Service that the new Sioux Sanatorium be located at Rapid City, S. Dak.

MEXICAN HEALTH OFFICERS

IT is reported by a member, who has just returned from a meeting in Mexico City, that Mexico, with 28 states, now has 20 states with full-time health officers. It is further expected, according to this observer, that after January 1, 1936, all 28 states will be under the direction of full-time health officers under a plan of joint federal and state support with the assistance of the Rockefeller Foundation. He reports encouragingly that politics have been notably absent from the health work so far in these states of the Republic.

MENTAL HYGIENE CONGRESS

THE Second International Congress on Mental Hygiene will be held in Paris, July 27–31, 1936.

Typewritten texts of reports should be sent to the Chairman, Dr. Rene Charpentier, 119, Rue Perronet, Neuilly-sur-Seine, Seine, France. It is recommended that applications from those wishing to take part in the communications and discussions be sent in before the middle of January, 1936.

JOURNAL OF INDUSTRIAL HYGIENE CHANGES

THE Managing Editors of the *Journal of Industrial Hygiene*, edited at the Harvard School of Public Health, Boston, Mass., announce that in 1936 the *Journal* will resume its former publication schedule of ten numbers annually instead of six.

The subscription price will remain $5.00 (foreign countries, $5.50). The abstracts will be unchanged but the original papers will be increased by about 50 per cent and the name will be changed to *Journal of Industrial Hygiene and Toxicology*.

NEW YORK CITY HEALTH DEPARTMENT BUILDING OPENED

THE new municipal health building of New York City was dedicated November 26 in ceremonies witnessed by thousands, beginning with a parade and terminating with an inspection of the ten-story structure which has been under construction four years. The building will be occupied by the New York City Health, Hospital, and Sanitation Departments.

Mayor LaGuardia, Commissioner of Hospitals S. S. Goldwater, Commissioner of Health John L. Rice, Manhattan Commissioner of Public Works H. Warren Hubbard, and Dr. John Hartwell of the New York Academy of Medicine, were among the speakers participating in the dedication ceremonies.

INDIANA HEALTH UNITS

THE 1935 General Assembly of Indiana passed a law permitting the establishment of full time county health units. The Lake County Commissioners on August 28, 1935, by resolution, set up the first full time county health department in the State of Indiana. The Commissioner of Health is Dr. William D. Weis, member A.P.H.A. In addition, provision was made for one sanitary inspector, one stenographer and clerk and four public health nurses all of whom will be employed as full time workers after January 1, 1936.

SPRINKLING FILTERS IN NEW JERSEY

THE Department of Health of the State of New Jersey, at a meeting held November 12, 1935, adopted a preamble and resolution which rescinded the rules and regulations established August 11, 1925, for the preparation and submission of designs for sprinkling filters at sewage treatment plants, and established new rules and regulations.

The action was based upon detailed investigations of the construction and operation of over 20 municipal sewage treatment plants where sprinkling filters were part of the methods of treatment.

Changes in the rules and regulations relate to: rate of application, underdrain ventilation, maximum loading, sludge disposal from secondary settling tanks, and dosing tank construction and operation. The use of sprinkling filters in conjunction with chemical precipitation is indicated.

ARIZONA PUBLIC HEALTH ASSOCIATION

THE Arizona Public Health Association held its annual meeting in Phoenix, Ariz., and elected Dr. A. N. Crain as president, Lydia Potthoff vice-president, and F. C. Roberts, Jr., second vice-president. Additional members of the Executive Committee elected were Dr. A. B. Ingels and M. R. Tillotson.

Dr. Crain, Mr. Roberts, and Dr. Ingels are members of the A.P.H.A.

VETERINARY CONGRESS PROCEEDINGS ISSUED

THE U. S. Department of Agriculture announced publication of the Proceedings of the Twelfth International Veterinary Congress, held in New York City in 1934. The Proceedings consist of 3 volumes, published by the Government Printing Office; including 82 papers on new developments in veterinary science and related subjects as presented by veterinary scientists, half printed in English and the remainder being in French, German, and Spanish. A summary of each paper appears in all 4 languages. The 3 volumes include over 1,500 pages of text, tabular matter, and illustrations.

The editing and publication of the Proceedings have been under the direction of John R. Mohler, Chief of the Bureau of Animal Industry, U. S. Department of Agriculture.

AIR HYGIENE GROUP ORGANIZES

AIR Hygiene Foundation of America, Inc., has been formed by a group representing various industries, with headquarters in Pittsburgh, Pa. The purposes of this organization are announced to be the conduct of investigations and research on problems in the field of air hygiene and the dissemination of information relating thereto. It will also coöperate with other agencies active in this field. Air contamination, especially by dust in the industries, will be studied particularly.

NEW YORK HEALTH PROJECT

A COMPREHENSIVE study is now being carried out as a joint project of the Works Progress Administration and the New York Tuberculosis and Health Association. The study includes tuberculosis, the heart diseases, cardiovascular renal conditions, syphilis, and occupational diseases with reference to Workmen's Compensation and the prevalence of contagion in the City of New York in the year 1934. It has the collaboration of the Department of Hospitals and of the Department of Health of the City of New York, and 114 WPA employees with previous educational equipment for epidemiological work are engaged on the project.

In the field of heart diseases the research involves a study of the cases of 15,000 patients in cardiac clinics.

Another group, under medical supervision, is making abstracts from the records of 100,000 cases in the eye clinics, in connection with eye disorders resulting from venereal infection.

In the tuberculosis study, the records of 20,000 patients for the 6-year period 1929–1935 are under examination. This investigation is under the supervision of a committee which includes the Deputy Commissioner of Hospitals, the Director of the Division of Tuberculosis of the Department of Health of the City of New York, and representatives of the New York Tuberculosis and Health Association. A study of diabetes and genito-urinary diseases as contributory to tuberculosis is included in this program.

The statistical section of the project is assembling data from the records of the Health Department on the 90,000 deaths from cardio-vascular diseases in New York in the years 1931, 1932, and 1933.

Still another section of the project is making abstracts of the State Department of Labor's Workmen's Compensation records to show the incidence of certain industrial diseases.

In addition to these activities, the project maintains two clinics in the city, which give opportunity for case study supplementing data gained by research.

FEVER THERAPY CONFERENCE ANNOUNCED

THE First International Conference on Fever Therapy is announced to meet in New York City in September, 1936. The subject under discussion will be the use of fever induced by physical and other agencies as a therapeutic procedure. Five previous national conferences on this subject have been held in the United States and the suggestion for this conference comes from a group of interested European physicians.

Those interested in participating are asked to notify the Secretary, Dr. William Bierman, 471 Park Avenue, New York, N. Y.

CAMPAIGN TO REDUCE AUTOMOBILE DEATHS

A NATION-WIDE campaign to reduce motor vehicle deaths at least 35 per cent by the end of 1940, to effect the saving of at least 38,000

lives, has been announced by the National Safety Council. The drive will start January 1, 1936. It will be localized for each state and for practically each city, in close coöperation with public officials, educational heads, and civic organizations. The campaign, largely educational, will include a broad program of engineering and enforcement activities.

The adoption of uniform laws, including standard drivers' license legislation, will be urged, together with adequate administration of traffic laws, including state highway patrols.

PERSONALS

DR. WALLACE W. CROSS, of Hanna, Alberta, Can., has been appointed Minister of Health of Alberta.

DR. BERNARD T. MCGHIE, former Director of Hospitals, has been appointed acting Deputy Minister of Health of Ontario, Can., succeeding Dr. William J. Bell, retired. The Division of Hospitals and the Department of Health of Ontario at Toronto have been merged under the Minister of Health, Dr. James A. Faulkner.

DR. EDWIN A. LOCKE, president of the Harvard Medical Alumni Association has been appointed Director of Health in Williams College, Williamstown, Mass.

THOMAS F. ABERCROMBIE, M.D., of Atlanta, Ga., member A.P.H.A., Director of the Georgia State Department of Public Health, was reëlected recently to serve his 4th term.

JOHN W. S. MCCULLOUGH, M.D., Chief Inspector of Health of Ontario, Can., F.A.P.H.A., retired after 25 years' service.

DR. FRED W. CAUDILL, of Georgetown, Ky., has resigned as Health Officer of Scott County to become Epidemiologist of the Kentucky State Health Department. Dr. Robert J. Griffin, of Louisville, succeeds Dr. Caudill in Scott County.

DR. NEALE M. ATKINS, of Eddyville, has been appointed to take charge of the new health unit established in Lyon County, Ky.

DR. LYNNE A. FULLERTON, has recently been appointed medical inspector in the Indian Medical Service, with headquarters at Spokane, Wash.

DR. GEORGE A. LECOMPTE, of Shelton, Wash., has been appointed Health Officer of Mason County, succeeding Dr. William M. Beach, of Shelton.

DR. HAMPTON E. BARKER, of Haleyville, Ala., has been named Health Officer of Bullock County, Ala., succeeding Dr. Leslie G. Cole, who has resigned to accept a similar position in Wetumpka.

DR. JULIUS E. DUNN, of Covington, Ky., has been appointed Health Officer of DeKalb County, Ala.

DR. SAMUEL GREEN has been appointed Health Officer of Southbury, Conn., and Dr. Julian G. Ely, Health Officer of Lyme, succeeding Dr. Matthew Griswold.

DR. JACOB EDWARD WALDMAN, of Middletown, has been named town Health Officer of Haddam, Conn.

DR. CHARLES M. MOORE, of Glasgow, who has been Health Officer of Barren County, has been appointed city Health Officer of Lexington, Ky.

DR. JOHN T. LOONEY, of Tishomingo, has been appointed Health Officer of Johnston County, Okla.

DR. JAMES ALLEN WHITAKER, of Mount Airy, has resigned as Health Officer of Surry County, to take charge of the Health Department of Rocky Mount, N. Car.

DR. CLARENCE H. WHITE, of Kenansville, has been appointed District Health Officer in charge of Avery, Yancey, and Watauga Counties, N. Car.

DR. HARRY W. WERTZ, of Montpelier, Ohio, was recently appointed Health

Officer of Williams County, to succeed the late Dr. William A. Held, of West Unity.

DR. JOSEPH I. LINDE has been appointed Health Officer of New Haven, Conn., to succeed Dr. Leonard Greenburg. Dr. Greenburg has become connected with the New York State Department of Labor, with offices in New York City.

J. D. DUNSHEE, M.D., F.A.P.H.A., formerly Commissioner of Health of California, has been appointed State Health Officer of Idaho and has begun his service in Boise.

RAYMOND B. FOSDICK, New York attorney, has been elected President of the Rockefeller Foundation and of the General Education Board, to take office July 1, 1936. He succeeds Max Mason as President of the Foundation, who has resigned, and Trevor Arnett, as President of the General Education Board.

WILLIAM THURBER FALES, SC.D., F.A.P.H.A., Director of the Bureau of Vital Statistics, Baltimore City Health Department, has been named State Supervisor for Maryland in the national health survey being conducted by the U. S. Public Health Service.

WILMER H. SCHULZE, PHAR.D., member A.P.H.A., Director of the Bureau of Environmental Hygiene of Baltimore, Md., is serving as industrial hygiene specialist for the industrial survey of the records of sick benefit associations, in the national health survey being conducted by the U. S. Public Health Service. This material, designed for the determination of sickness and death rates according to occupation, is intended to supplement the data gathered in the house-to-house canvass.

HOWARD I. COLE, PH.D., formerly Chief Chemist of the Culion Leper Colony, P. I., has been appointed by the League of Nations to conduct research at the new International Leprosy Center in Rio de Janeiro, according to *Science*.

FREDERICK T. FOARD, M.D., of the U. S. Public Health Service, who has been in charge of a sanitation program conducted by the West Virginia Health Department and the emergency relief administration, has been transferred to San Francisco, Calif. Dr. Albert M. Price, of the Health Department, will take charge of the sanitation work.

BURTON K. KILBOURNE, M.D., Fellow A.P.H.A., Health Officer of Fargo, N. D., since 1923, has been appointed Epidemiologist of the Montana State Board of Health at Helena.

DR. GILBERT G. COTTAM was recently appointed to the newly created position of Director of Health and Hospitals for Minneapolis.

DEATHS

DR. LAFAYETTE BENEDICT MENDEL, of Yale University, died at his home in New Haven on December 9, at the age of 63. Dr. Mendel was best known for his pioneer work on the vitamins, particularly Vitamin A. He was also known as author and editor.

CONFERENCES

Jan. 14–17, Eighth Annual Meeting of the New York State Sewage Works Association, New York, N. Y.

Jan. 27–31, Fourth International Heating and Ventilating Exposition, Chicago, Ill.

Feb. 3–15, Institute for Training of Tuberculosis Workers, under the auspices of the National Tuberculosis Association, New York; to be held at New York University, Washington Square, New York.

Mar. 2–6, Twentieth Annual Session of the American College of Physicians, Detroit, Mich.

Apr. 1–3, American Water Works Association—Canadian Section, Hamilton, Ont.

Apr. 22–25, National Tuberculosis Association, New Orleans, La.

May 11–15, American Medical Association Convention, Kansas City, Mo.

May 14–16, American Water Works Association—Pacific Northwest Section, Aberdeen, Wash.

June 24–27, Seventh Annual Meeting, Western Branch, A.P.H.A.—meeting simultaneously with Canadian Public Health Association—Vancouver and Victoria, B. C.

June 8–12, 56th Annual Convention, American Water Works Association, Los Angeles, Calif.

July 27–31, Second International Congress on Mental Hygiene, Paris.

Sept. 8–10, International Union Against Tuberculosis, Lisbon, Portugal.

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AMERICAN PUBLIC HEALTH ASSOCIATION

50 WEST 50TH STREET, NEW YORK, N. Y.